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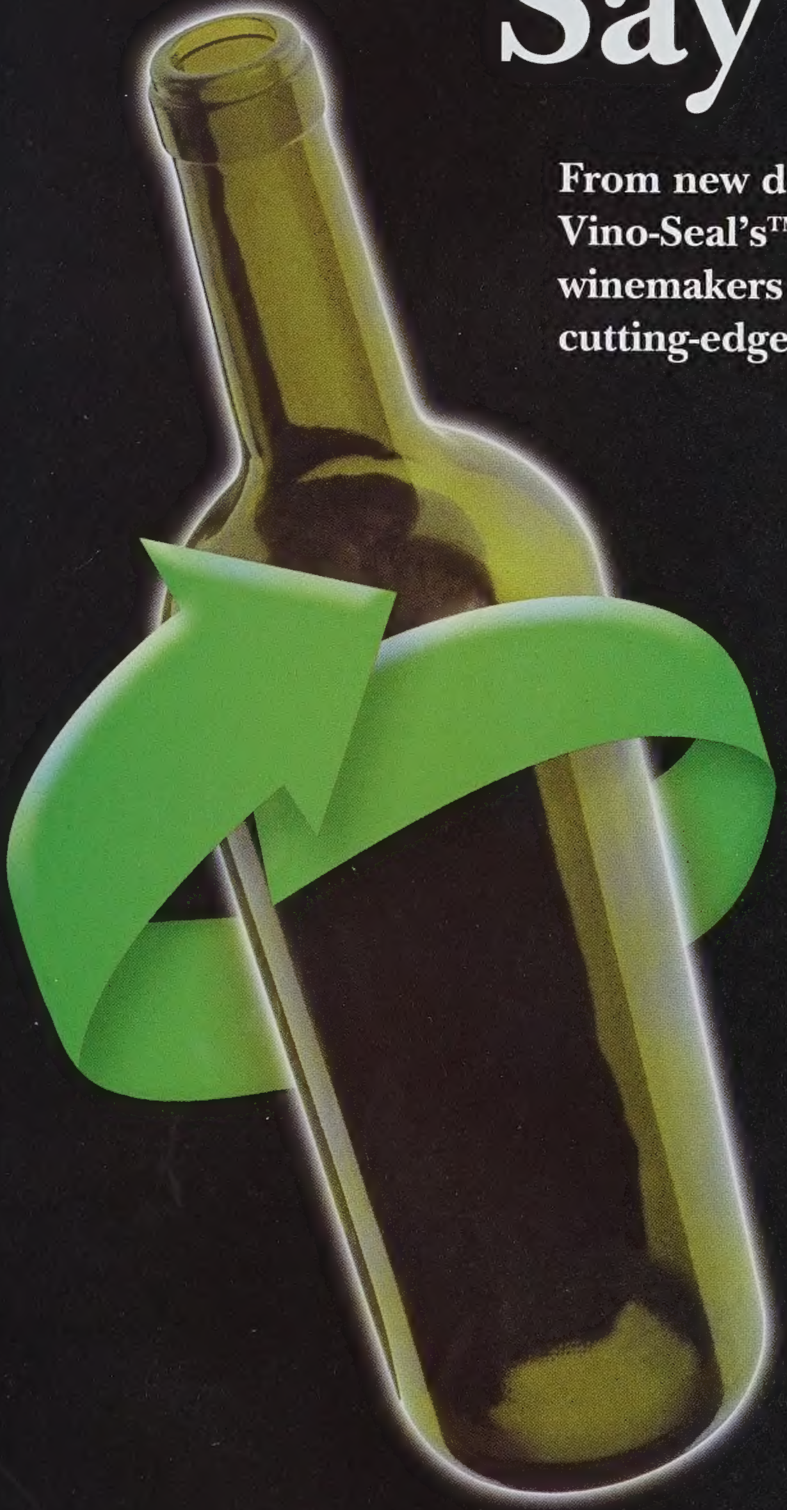

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Cover photo: Brassfield Winery, Clearlake Oaks (Lake County), CA. (Photo by Don Neel)

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The Fetzer Vineyards' solar panel installation was 40kW in the late 1990's. The 2006 addition of 1.1 million kW made Fetzer's system the largest at any winery in the world.

5 financing options for solar energy

BY Tina Vierra

Until it is more widely adopted, installing solar photovoltaic (PV) panels and the supporting parts of a system to run them and produce energy for your winery/vineyard is expensive in the short term.

In a 2006 cost study, PV panels cost $6.50 to $7.50 per installed watt. Multiply the low number by an average winery PV installation to date, such as the 78 kW at Robert Sinskey Vineyards (Napa, CA), and you get a significant cost of $507,000 for the system.

In the long term, going solar is a no-brainer; you become your own energy producer with reduced or zero electrical bills, pay off your initial capital investment in the first five to 10 years, and the panels continue to generate free energy for 25 to 30 years. The $10,000/ month your winery was paying for electricity is now going in the bank, and you are not paying rising utility rates like your neighbors.

PWV consulted a number of finance experts and solar installers, and found that there are five basic finance models wineries can use for the initial capital costs of installing solar energy (see Table I).

Rebates and Incentives in California

The state of California continues to fund incentives to install renewable energy, most recently by channeling funds through the California Public Utilities Commission (CPUC) under a program known as the California Solar Initiative (CSI). In addition to the overall $2.9 billion in funding over 10 years, what used to be two programs are now combined into the CSI, which is being run by the major utilities.

Table II shows current rebates and incentives available for commercial solar installations. Rob Erlichman of Sunlight Electric (San Francisco, CA) translates some of the terms.

"The trigger is a mechanism incorporated by the CPUC in the CSI that, in essence, meter the subsidies out appropriately as demand for them rises," Erlichman explains. "In other words, the more people want subsidies, the less the state needs to give away.

"This is also supposed to reflect that as the early purchasers are subsidized, the manufacturers of PV equipment will be increasing production, and they should be able to lower prices. Triggers are based on the very successful 10-year PV subsidy programs in Germany and Japan that started in 1990 and 1995, respectively, and now PV markets in those countries are thriving without such aggressive early subsidies.

"Performance-based incentives (PBIs) are paid on actual system output over time. In other words, the CSI 'rebate' for PV systems over 100 kW is now a performance-based payment of $0.26 for every kilowatt-hour produced in the first five years. Before the CSI came into existence, the state paid an actual rebate of cash based on the rated specifications of the system."

Basing the incentives on the performance of the PV panels and the inverters that comprise the system was a "smart move" on the part of the CPUC, according to efficiency advocates, since panel performance numbers are based on perfect lab conditions, and would

Stoller Vineyards (Dayton, OR) installed a 244-panel PV system as part of the LEED-certified winery built in 2006.

rarely be as high under field conditions such as overcast days, dust and dirt on the panels, distance of panels from the inverters, and other factors. Inverter efficiency is at about 94% to 95%, and slowly rising, Erlichman notes.

The PBI encourages panel manufacturers to reach for better output, and installers to design systems that will perform best in the field, and businesses to maintain PV systems at peak efficiency, for maximum rebate dollars.

"There are really four issues here," says Erlichman about panel performance. "The first is the PV module manufacturers' silly practice of using a 'nameplate' rating and how that can be misleading. For example, Sharp has a '208-watt' module and Sanyo has a '200-watt' module, so a 208 should be better than a 200, right? Not quite.

"Looking at the published performance under 'standard test conditions' using PVUSA (Photovoltaics for Utility Scale Applications) methodology, which the California Energy Commission (CEC)/Self-Generation Incentive Plan (SGIP)/CSI requires we use for any calculations, we see that the Sharp 208 puts out only 183.3 watts while the Sanyo 200 puts out 188.7 watts. System designers and installers should be educating customers about these differences, which apply to all module sizes.

"The second issue is space-efficiency," he continues. "Using the comparison of the two modules above, the clear winner is the Sanyo, right? Again, not quite. The Sharp module takes up 17.5 sq ft while the Sanyo is 12.7 sq ft, so if space is at a premium, it might be worth paying a premium price for the Sanyo. But if space isn't a concern, why pay more — the customer could well save some money and get the Sharp module.

"Which brings us to the third issue — different technologies perform differently. The Sharp 175-watt modules at Frog's Leap Winery (Rutherford, CA) were fairly sensitive to the dirt kicked up from the well-traveled adjacent unpaved road, so we put in a

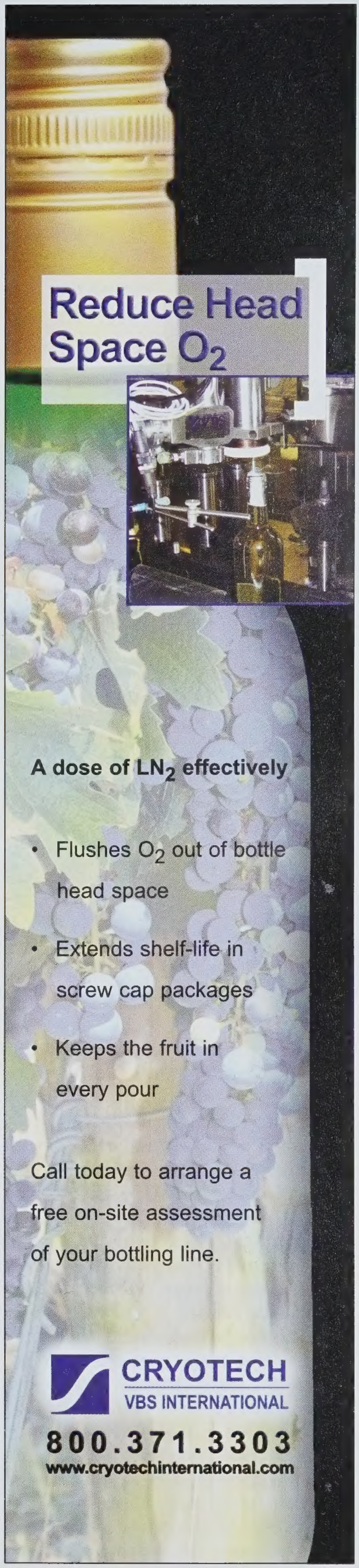

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Table I: PV Financing Strategies

	Pay Cash	Home Equity Loan	Commercial Loan	Lease	Power Purchase Agreement
Description	Pay for investment from cash/ retained earnings	Home equity loan on personal property used to fund purchase	Commercial loan to fund purchase	Third party owns system; customer makes lease payments for term of lease. Purchase option at end of term	Third party owns system, sells power at close to utility rates for term of agreement. Usual/often typical purchase option at end of term
	Non-cash purchase allows for potential of immediate positive cash flow and, depending on terms, lifetime positive cumulative cash flow.				
Pros	Simplest payment mechanism	• Usually the highest NPV (Net Present Value) • Longer terms available • Lower rates • Federal deductibility of mortgage interest	• Usually the second highest NPV • Frequently can achieve positive cash flow in Year One	• Stable power costs for term of agreement • Get tax benefits even though not paying taxes • Off the balance sheet (some lease types)	• Off balance-sheet financing mechanism • winery not responsible for system maintenance • Get tax benefits even if not paying taxes
Cons	Ties up available cash, limiting funds for other uses	• Must have equity available • Dislike of mixing business and personal finances	• Less attractive terms than home equity • Adds to debt load, potentially limiting extent of future borrowing	• No ownership of PV system • Lease payments typically greater than current electricity expense (most standard leases; see Table III for other lease options)	• No ownership of PV system • Better terms available to larger PV purchases (250 kW and up) • Small per-kWh savings and continued exposure to inflation
Best Suited for	Those with aversion to debt who have high cash balances	Family-owned wineries that easily mix business and personal finances	Most wineries	• Businesses with limited borrowing capacity • Those with strong aversion to debt/ adding assets to balance sheet • Those paying little/no taxes	• Large-scale projects (>300kW)* • Those with strong aversion to debt/ adding assets to balance sheet • Those paying little/no taxes

Table courtesy, Sunlight Electric Photovoltaic Systems

*new PPAs for small systems are now available through some installers

sprinkler system to clean them. Installers need to make sure they know the products well, and that the customer understands the options and the trade-offs.

"Finally, there's the matter of the tilt, orientation, and local weather conditions. The CSI is also using this information to calculate rebates. Installers must account for local weather, and we have some fairly rigorous data to work with, but as you know, microclimates in wine country can yield some pretty different weather in one location just a few miles away from another. Be conservative in the projections, and make sure the customer knows the assumptions and what's behind them."

Pacific Gas & Electric (PG&E) has a reference center on panel performance at www.consumerenergycenter.org/erprebate/equipment.html.

Because of the three-year carry-back, wineries do not have to wait until they file taxes for the year in which the system was installed to claim the 30% Federal Energy Tax Credit. As long as a winery has paid taxes that equal the amount of the credit, they can speed up the receipt of the tax credit by amending their filings for three years prior to the system installation. If not, they can take up to 10 years (10-year carry-forward) to claim the credit.

Finally, NPV is net present value, the financial mechanism for valuing a stream of future cash flows. For example, this principle is employed with lottery winners, when the winner of a $100 million prize is offered $5 million per year for 20 years, or $68 million today. $68 million is the net present value of the future cash flow streams of $5 million/year for 20 years.

The following contacts can help California wineries research and understand renewable energy rebate plans: PG&E California Solar Initiative (CSI): http://www.pge.com/csi; and PG&E Business Customer Center: 800-468-4743.

Efficiency first

This is the fourth *PWV* renewable energy report. *PWV* is emphasizing efficiency. It bears repeating in this context, because:

1) becoming more energy-efficient **before** going solar decreases the size of the system you install, and therefore its cost; and

2) becoming more energy-efficient will be required as of 2008, by Public Utilities Commissions and other state agencies, before you can collect the rebates they offer against the capital cost of your solar system.

Energy auditing

PG&E's online energy audit can be found at: http://www.pge.com/biz/

Honig Vineyard & Winery, Rutherford CA

It's time to seriously consider solar power. It's time because there are significant subsidies that are scheduled to decline soon. It's time because there are new financial products that not only make solar affordable, but smart.

And finally, it's time because only one company has the experience Sunlight Electric has at coming up with creative solar solutions for wineries – more than twice the number of Napa winery projects than any other provider.

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Table II: 2007 Rebates, Tax credits, and Depreciation benefits in California

Incentive name/type	System size (if applicable)	Amount/ benefit	Action
CSI EPBB (Expected Performance-Based Buydown)	Less than 100kW	$1.90/watt. Declines to $1.55/watt at next "trigger"	Once the winery is approved for rebate, solar installer can accept rebate as down-payment on installation.
CSI PBI (Performance-Based Incentive)	• Required if system >100kW • Can apply to systems <100kW	$.26/per-kW-hour paid monthly for 5 years *	Entire expected rebate placed aside to guarantee funds for future payments.
Federal Energy Tax Credit		30% of *net* project costs (total projects costs less any up-front rebates paid to solar installer). Can get up to 30% of *gross* cost under some tax structures. 10 year carry-forward, 3 year carry-back.	Solar installer provides completed Federal tax form 3508.
MACRS (Modified Accelerated Cost Recovery System) Depreciation		5-year depreciation	Solar installer provides completed Federal tax form 4562.

*as of date of this writing. PBIs and EPBBs continue to cycle down in value — check with PUC or solar installers for current rates.

energy_tools_resources/energy_audit/index.html.

Gary Mercuri (PG&E's CSI group) notes that, in 2007, there were no restrictions on who performs an audit. It is the winery's responsibility to provide the audit, but an audit performed by a third party or by PG&E is acceptable.

PG&E offers free audits that are available online, over the phone, or in-person with a PG&E account representative. PG&E/CPUC does not pay for a third-

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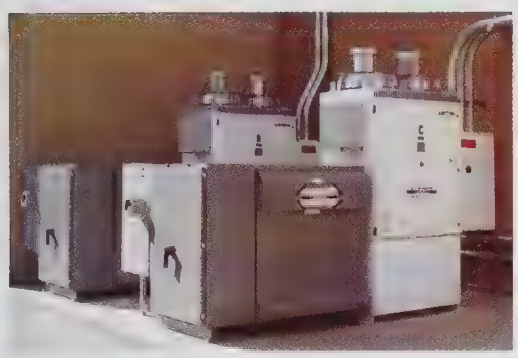


At 95% efficiency, Fetzer's Xantrex inverters and transformers convert DC current from PV panels to AC current for the utility grid.

party audit because the online, phone, and in-person audits provided by PG&E are already paid for by the CPUC.

Once the audit is completed, the customer can send in a printout of their online audit, a copy of an audit performed by a PG&E representative, or a copy of the audit performed by a third party. A third-party audit performed within the last three years will qualify

If a facility had a Title-24 compliance done within the last three years, that document can be used in place of the audit.

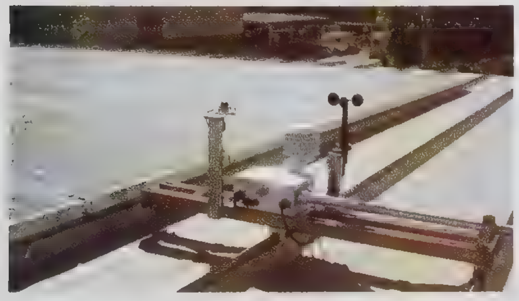
In 2008, the CPUC plans to require that audits be performed and that recommended energy-efficiency upgrades be done in the facility before the incentive will be provided, but these additional requirements have not yet been fully determined by the CPUC.

Gopal Shanker of Récolte Energy (Calistoga, CA) is an energy consultant, and longtime advocate of both energy efficiency and renewable energy programs; he clarifies the new efficiency restrictions:

"The 2007 required energy audit is not a strenuous one," he says. "Nor has the CPUC worked out what efficiency upgrades will be required in 2008 if a winery operation is not found to be efficient. It's a good start, to encourage energy efficiency rather than larger energy installations.

Since a winery producing solar energy and feeding it back to the utility's grid can do no better than to receive a zero-dollar annual energy bill, they should become efficient first, and then install the smallest system which will meet 100% of the energy needs."

Shanker educates his clients on how to use energy and provides a comprehensive site-audit by a professional energy auditor, and then proposes equipment and other site upgrades



The Fetzer PV system covers 75,000 square feet, generating energy and insulating the roof of the red wine barrel room and the bottling facility.

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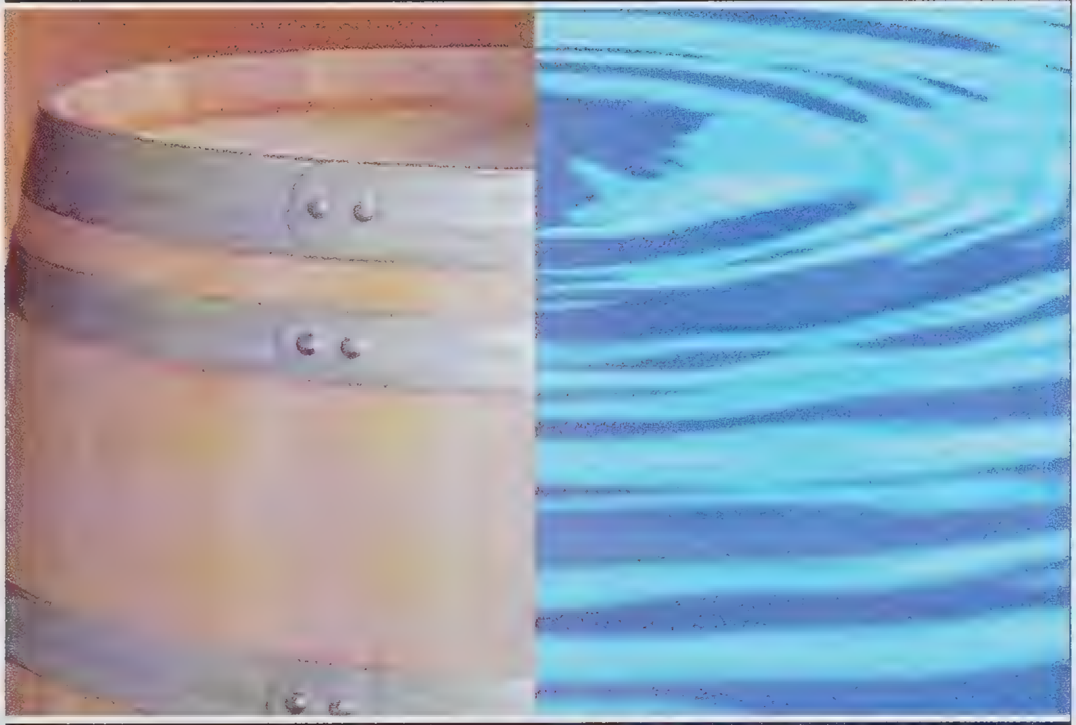

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Sunlight Electric installed Honig Winery's 819 PV panels 1/4 mile from the winery buildings, on low-productivity land not in use for vineyards.

and a move to renewable energy. His process is to apply for the rebates, do the online energy audit with his winery customer to start getting them qualified for the rebate, and then initiate the full audit.

"Yes, this method will cost the winery more in the beginning, but they will have a more robust solar system," he admits. "Sometimes the winery will have to spend thousands on efficiency upgrades, but these upgrades often cost as much as generating solar electricty. At today's costs for PV system hardware and labor, wineries can save $6,500 to $7,500 on every kW they do not have to install."

Businesses that install over-large systems are essentially becoming producers of free energy to the benefit of the utility, and there is a disincentive under this plan for these over-producing businesses to become more energy efficient in future.

Shanker is lobbying legislators to repeal the restriction that says the utility companies do not have to pay for excess energy produced by a commercial customer. He argues that if the energy producer is paid even at wholesale rates for excess energy produced, more businesses would not only invest in renewable energy, but they would then have an incentive to become more energy-efficient. Even the utilities would benefit.

Shanker keeps a close eye on worldwide legislation, programs, and the politics of green energy. He reports that more states will soon join California and Oregon by introducing strong renewable energy incentives in 2008, including Pennsylvania, New Jersey, New York, and Maryland.

Shanker told ***PWV*** that commercial businesses will likely be facing new taxes based on their CO_2 output in the near future. The Global Warming Solutions Act, passed in California in 2006, calls for statewide reductions in carbon dioxide levels. California has not yet determined how to achieve the reduction of carbon dioxide down 25% from current levels to 1990 levels by 2020. One solution, under discussion, is to tax CO_2 emissions. For wineries, this could mean large payments to the California government — one more reason to become as energy-efficient as possible, and to consider renewable energy production.

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Rebates/Incentives in Oregon

The state of Oregon now has a strong renewable energy incentive program. As of 2008, commercial PV installations can collect:

- a Federal tax credit up to 30% of the total system cost, with no cap;
- the same MACRS depreciation on their system as in California (see Table II);
- an Oregon Business Energy Tax Credit of up to 35% of eligible system cost over five years; and
- utility rebates, depending on location, of $1.25 to $1.50/watt for the first 30 kW and $1.00 to $1.25/watt for the next 20 kW, up to $57,500 to $70,000 caps.

Certain Oregon cities, such as Ashland, offer city utility rebates greater than the public utility rebates, free solar site analysis, and other help to businesses.

Two Oregon wineries have installed PV systems — Stoller Vineyards (Dayton, OR) in 2006, and Sokol Blosser Winery (Dundee, OR) in 2007.

Bill Stoller and his family completed construction of a fully-green, LEED-certified winery in 2006, and a full construction and engineering report will appear in *PWV* in 2008. Stoller's 244-panel solar energy system, installed by Dynalectric of Portland, was an important addition to the overall Green Plan. Rated at 48 kW, Stoller reports that the system's 2006 output was higher than expected.

"We actually achieved 57 kW in 2006," Stoller recalls. "The panels turned out to be more efficient than

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"Solar energy is good for the environment and reducing greenhouse gas is good for the community.

"With rising energy costs and generous rebates currently offered, solar was an easy decision," says Alex Gunst, Construction Project Manager of Pound Co. "SolarCraft was very flexible and their professionalism was exceptional."

Besides the financial and environmental "no-brainer," solar systems for businesses qualify for:

- **Tax credits and rebates that pay more than 50% of system costs**
- **Accelerated tax depreciation**
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anticipated, and we had sunnier weather than usual." As in California, however, Stoller's utility did not have to pay the winery for the excess energy produced.

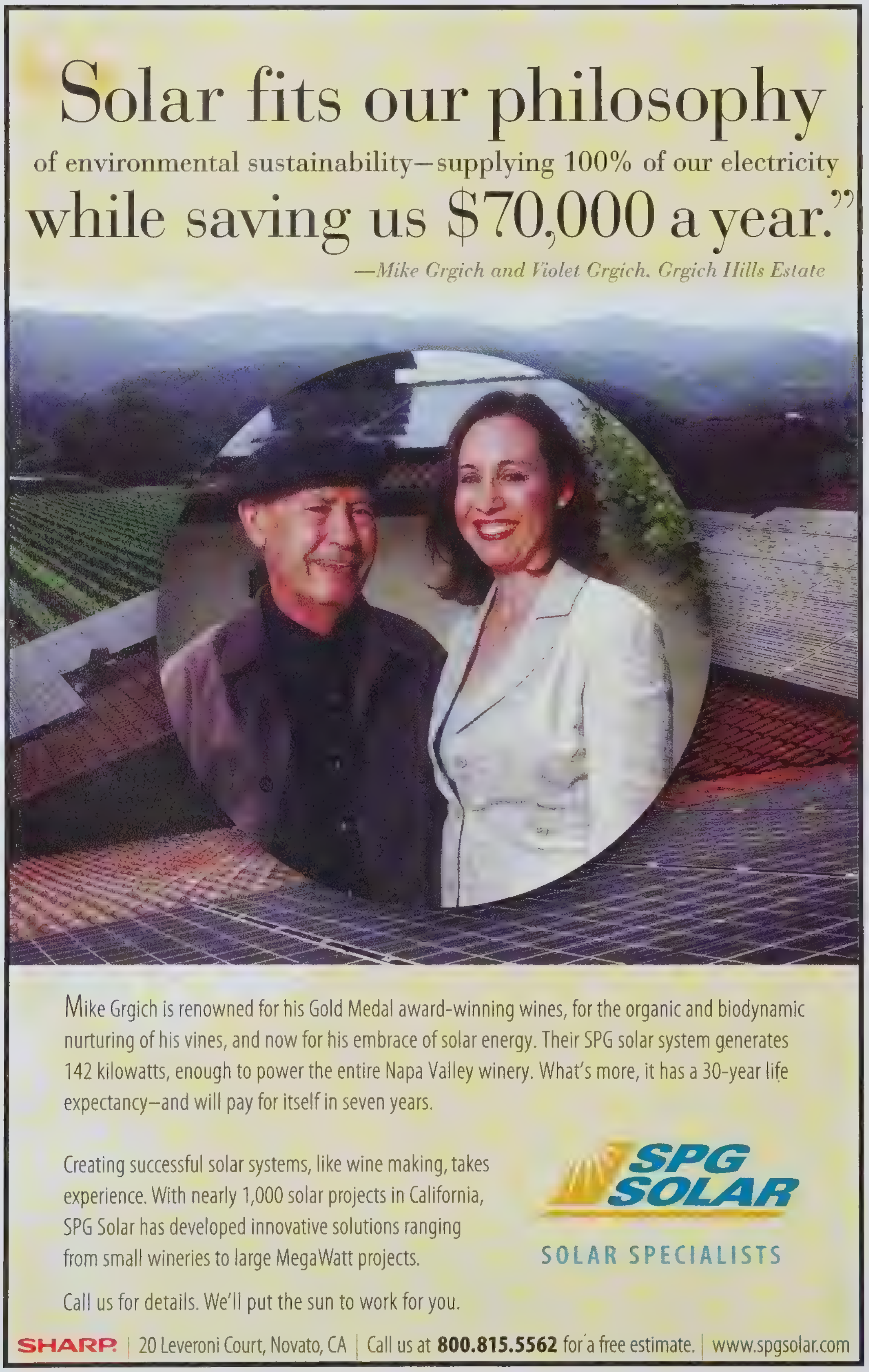
The gross cost of the Stoller system was $360,000. The winery received a 30% Federal tax credit, the 35% Oregon Business Energy tax credit, and an Energy Trust of Oregon rebate. Stoller financed the balance, and anticipates a 12-year payback on the system.

"The regulatory and economic climate in Oregon is very supportive of the move to solar power," Stoller says. "The state even makes low-interest loans to companies installing solar energy; we opted not to go this route ourselves, but it serves to make the solar option more attractive (and in some situations achievable) for some companies.

"The people from the utilities — the Energy Trust and PGE (Portland General Electric) — and the consultants such as Green Building Services and Dynalectric, who deal with this on a daily basis, were the key to working around the PUC bureaucracy, and getting the construction accomplished. As the generation and use of solar power becomes more prevalent in Oregon, there are more people who know their way around the system and can help a business become more sustainable."

Finance model: Commercial loan

Sunlight Electric installed a 146 kW solar power system at Honig Winery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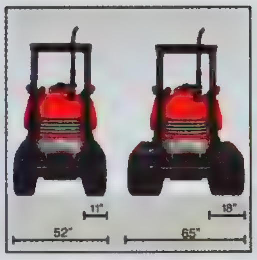

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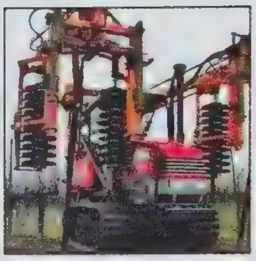

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(Rutherford, CA) in August 2006. Sited on low-productivity land with high clay content, 819 panels and an inverter are in a field about 1/4 mile from the winery and its PG&E utility connection. Power is delivered to the utility grid through a 1,250-foot long conduit, buried 18 inches deep.

Prior to solar installation, the winery made several efficiency upgrades:

- put in a new glycol chiller with variable-drive compressors;
- downsized the main air compressor;
- installed a variable-drive water pump;
- put tinted windows, new lighting, and insulation in the front building and offices; and
- minimized artificial lighting in the fermentation rooms by using daylighting through the roof.

After upgrades, the winery determined that their solar system would have to offset remaining energy expenses of about $43,000 per year to meet 100% of the winery's energy needs.

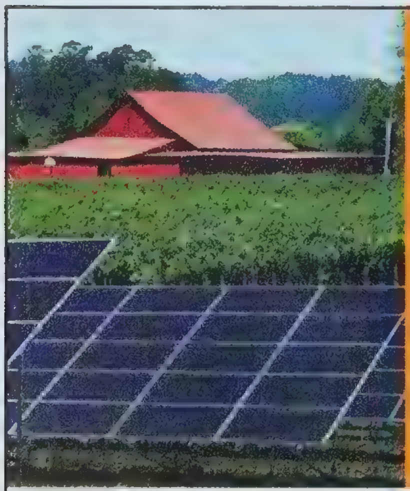
Since the panels were installed in a field, Sunlight Electric advised using Sanyo panels, a hybrid technology (amorphous silicon and crystalline silicon) that is much more tolerant of dirt, shading, and higher temperatures than other panel types.

In simple terms, Honig paid, by commercial loan, just 23% of the gross cost of their solar installation, after rebates and incentives. Sunlight Electric, as most installers do these days, helped winery CFO Tony Benedetti through the maze of incentives and paperwork. Of the $1.25 million gross cost, just under $570,000 had to be financed by Honig's lender, American Ag Credit. Erlichman notes that commercial loans are the most common financing.

On a fixed-rate loan from American Ag Credit, the winery is paying a fixed amount per month for their PV system, while paying nearly zero dollars in energy costs, which are rising for other utility customers. Honig saves more and more money each month.

Erlichman explains the rebates and tax credits that Honig Winery earned on their system: "The Honig PV system is rated at 146 kilowatts (kW). The 819 Sanyo PV modules are each rated (by the CEC) at 188.7 watts, and the Xantrex inverter is rated at 94.5% efficiency. 819 x 188.7 x 94.5%, is 146,045 watts, or 146 kW. This is the amount upon which their cash rebate was based. We secured $2.80/watt, or $408,927 up front, before the project started. Honig Winery was part of the older SGIP when they applied for their rebates.

"Under the new CSI rules, Honig Winery would not qualify for a cash rebate, but would receive a PBI on the power their system produces in the first five years. We project annual output of 249,475 kilowatt-hours (kWh), so the CSI PBI would be 249,475 x $0.39, or $97,295 per year for five years.



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"Though that sounds like a better deal than $408,000 up front, and it is, it's a little more complicated because of the tax implications. The PBI payments are taxable income, while the rebate wasn't, but since the 30% federal tax credit and the depreciation are based on the total actual cost of the project, the total is now higher than before, since before you had to take the rebate out of the total paid, to calculate the 30% tax credit and depreciation. The next effect of the shift to PBIs is quickening of the payback period for PV investments, from five to seven years to four to six years."

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Honig Winery took the entire tax credit on the 2006 returns, an option that suited the winery's partnership structure.

Finance model: Cash paid

Van Ballentine, a Napa Valley grape grower for over 60 years, manages 100 acres of vineyards and his family's winery. In July 2007, SolarCraft (Novato, CA) installed an 87 kW PV system at the winery, with 512 Mitsubishi 170-watt panels on two rooftops. A 75 kW SatCon inverter sends converted power to the utility grid.

"We installed tilt panels on the south-facing barrel storage roof to maximize exposure to the sun," Chris Bunas (SolarCraft VP) explains. "The WSW-facing winery storage roof panels were installed flat as their orientation was already ideal. Besides achieving maximum panel performance, the Ballentines were pleased with the placement and aesthetics of the system."

The Ballentine Vineyards 87 kW solar system will pay for itself in just six years.

Gross system costs were $642,384, and the net cost to Ballentine after rebates and incentives was only $161,391, which the winery paid in cash. With no interest to pay, and offsetting nearly $18,000 in annual utility bills, the Ballentines expect the system to pay for itself in about six years.

"Our main reason for installing a PV system is to eliminate our high electrical bills," Ballentine says. "Solar energy makes good financial sense, and the environmental benefits are an added bonus."

Finance model: Home equity loan

Family-owned Peju Province Winery (Napa, CA) installed a 126 kW solar system with Akeena Solar (Los Gatos, CA) in late 2006. Ariana Peju calls it their "Harvesting the Sun" project. The system will power about 36% of the

Table III: Leasing Strategies for a sample 36kW-rated solar installation

	True Lease (aka Tax Lease, aka Operating Lease)	Finance Lease (aka Capital Lease; applies also to Bank Loan)
Amount Financed	total system cost	total system cost
Term or Length of Financing	10 years	7 years
Purchase System at End of Term	yes, 15% to 25%	yes, $1.00 to 20%
Federal Tax Credit Used by	Leasing company	Lessee/Borrower
Accelerated Depreciation Used by	Leasing company	Lessee/Borrower
CA Rebate (incentive) Assigned to	Leasing company	Lessee/Borrower
Customer Tax Savings Expensing	100% of lease payments	depreciation & interest
Payment Structure	usually "stepped"	usually level
Monthly Payment	**$633** plus 5 to 7% per yr (10-yr term, 25% buyout)	**$3,497** (7-yr term, 20% buyout)
Annual Total	$7,600	$41,960
Annual Avoided Cost	$8,000	$8,000
Annual Cash Flow (from) to Savings	+$400 (5%)	($33,960)

Table courtesy of Mission Capital

winery's annual energy needs, and save about $1,800/month in utility bills.

The gross cost of the system was $926,667, offset by the rebates and tax incentives. Peju applied for its rebate under the SGIP that preceded the CSI program, and collected a flat per-watt payment rather than the CSI performance-based incentive. Net cost of the system was $387,970, for which the family paid part in cash, financing the rest with a loan against the family properties.

Barry Cinnamon (Akeena Solar) explains that with a cash paydown and loan purchase such as Peju employed, and projected utility costs saved, a winery could get up to a 20.7% rate of return on the investment in solar energy.

"Property value is another positive financial factor when installing solar," Cinnamon adds. "According to the Appraisal Institute, energy-saving improvements can increase your property's value by $20 for every dollar reduction in annual energy usage. In Peju's case, the value of their property was increased by $435,000 in current dollars, which was more than the net cost of the system."

Finance model: Leasing

Leasing has not been adopted by wineries to finance solar installations as yet, because the common thinking was that since the winery would not own the system, they couldn't take advantage of the tax incentives. Jerry Guffey (Mission Capital, Healdsburg, CA), however, has been working with lenders and has come up with two leasing models that will benefit wineries and lenders in a leasing situation for solar.

"The key," says Guffey. "was to capture the tax benefits for either the lender or the winery, and make the situation pay off for both parties."

There are two types of leases available now to finance the capital costs of a solar installation (see Table III).

The first is called a "true lease," and applies to wineries in tax-sheltered or no-tax situations, such as S-corporations or limited liability companies. The true lease offers a lease-to-own situation where the lender can claim the rebates, tax credit, and depreciation on the system, while the winery leases the rest of the system cost on a 10-year term. With this arrangement, the lease payments can be as low as ¼ to ⅕ of what a commercial loan payment would be.

The second type of lease is called a "finance lease" or "capital lease" for

Continued on page 120

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BALANCED BLENDS

Crafting accessible Cabernet Sauvignon

BY Eleanor & Ray Heald
Contributing Editors

While evaluating 2005 Bordeaux red wines on-site in 2006, we had the pleasure of tasting 30 wines for which Olivier Dauga was the consulting winemaker. Dauga was present and willing to answer questions about techniques he uses to make Bordeaux reds more elegant and accessible.

A non-traditional Bordeaux practice of a five to 10-day pre-fermentation maceration at low temperature (13°C [55°F]) and not allowing alcoholic fermentation to rise above 77°F are two of Dauga's strategies.

When fermentation is complete, Dauga allows the temperature of the resulting wine to rise to about 82°F for malolactic fermentation (MLF). "Wine," says Dauga, "should be elegant to match with food. Over-extracted wines at high temperatures will not be elegant."

This got us questioning. What are veteran Napa Valley winemakers doing to achieve Cabernet Sauvignon accessibility? In a roundtable discussion, we asked four winemakers.

Vineyard profiles/accessibility

Specific Cabernet Sauvignon components for the 2003 Beringer Napa Valley Private Reserve Cabernet Sauvignon come from St. Helena Home Ranch (32%), Steinhauer Ranch (19%), Marston Vineyard (12%), Bancroft Ranch (12%), Quarry (8%), Rancho del Oso (6%) and Chabot (6%). The Cabernet Franc blending component is sourced from Bancroft Ranch (3%) and Steinhauer Ranch (2%).

"Our prime concern," says Beringer winemaker Laurie Hook, "is not a wine of immediate accessibility. The goal of the Private Reserve is to make the best wine possible from our vineyards that really showcases the vintage. We are seeking a wine with balance. Howell Mountain Cabernet Sauvignon has small berries and therefore significant color and tannin. Fruit from the St. Helena Home Vineyard, in particular, helps to balance Howell Mountain fruit from Bancroft, Steinhauer, and Rancho del Oso."

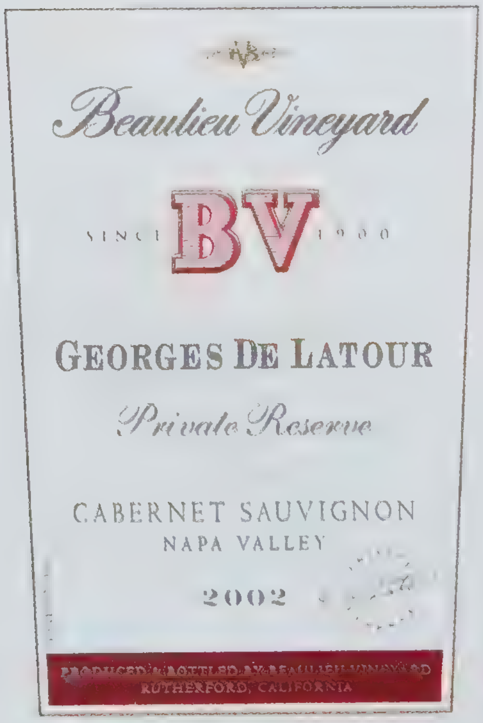
With low fertility and well-drained soils, Beaulieu Vineyard's Georges de Latour Private Reserve Cabernet Sauvignon's principal vineyard site is located on the west side of Napa Valley in the Rutherford sub-American Viticultural Area.

Beaulieu winemaker Jeffrey Stambor suggests that soil composition is not a big part of what promotes accessibility in this wine. "Beaulieu has a very long history with this vineyard and I believe accessibility is due more to how winemaking has evolved over the years. True potential does not show without some bottle age."

Facing northeast, Flora Springs Rutherford Hillside vineyard in Napa Valley rises up the western hills from the valley floor. "It loses the afternoon sun rather early," notes winemaker Ken Deis. "I believe this has something to do with the wine's accessibility. The vineyard is well-drained; vines have low vigor, and small berries without high tannin levels. Overall, it's a relatively cool site at the north end of Rutherford."

Silverado SOLO Cabernet Sauvignon, 100% varietal and 100% from its Home Vineyard in the Stags Leap District (SLD), has been produced from this site since 1981. "I believe soil and the clonal selections play an important part in SOLO's style," says winemaker Jonathan Emmerich.

The site was shaped by a shift off the eastern hills of Napa Valley that created a knoll now occupied by



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Silverado, Pine Ridge, and Hartwell wineries. Soils impact both pH and tannins. Additionally, for the 2003 SOLO, a unique field selection of 88% See Clone and 12% UCD-4 has become particularly adapted to the site, where Emmerich reminds, "The Stags Leap district was once considered too cool for growing Cabernet Sauvignon."

Stambor adds, "the French have said it's terroir, and in California we've said climate, climate, climate. But as elements have evolved, it has become very complex. What has been overlooked is local winemaking tradition."

Vineyard particulars

Beaulieu Vineyard planting densities are low, about 800 vines per acre, spaced 6x10. The principal rootstock is 039-16 which is fairly vigorous. "On the valley floor," Stambor notes, "although it's not a very fertile site, I don't believe that there's real vine competition with tight spacing under California conditions."

PARTICIPATING WINEMAKERS:

Jeffrey Stambor, Beaulieu Vineyard

Laurie Hook, Beringer Vineyards

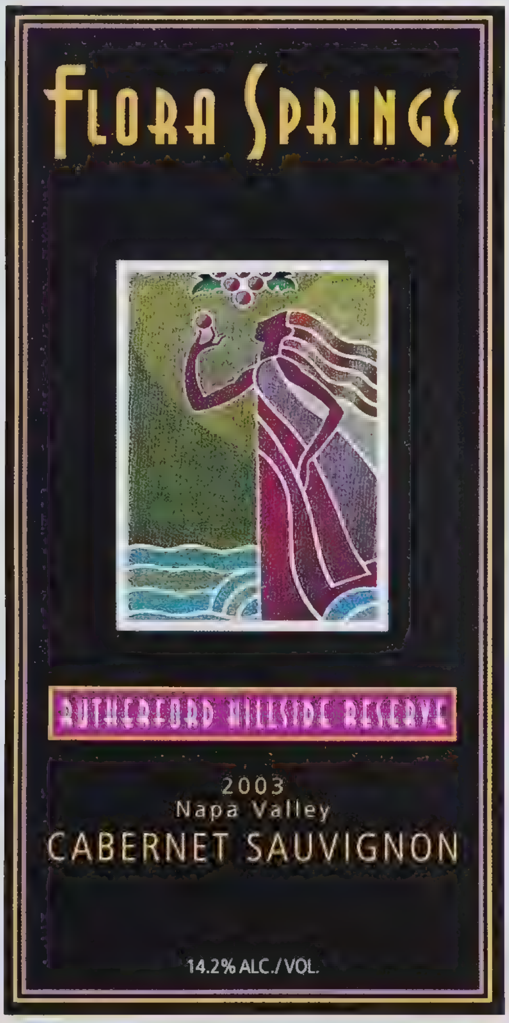
Ken Deis, Flora Springs Wine Co.

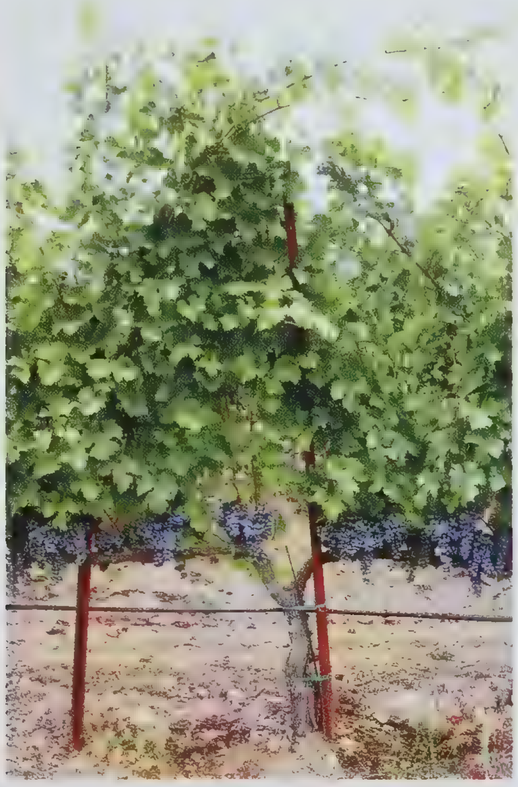
Jonathan Emmerich,
Silverado Vineyards

Silverado's SLD vineyard was replanted between 1990 and 1994. From the original pre-phylloxera planting, 8x6 spacing was not changed, although drip irrigation was added.

At the Flora Springs Rutherford Hillside vineyard, vines are six feet apart. Due to the terraced hillside, distance between vine rows can be anywhere from six to 12 feet.

Stambor notes that there has been a trend toward vertical shoot position (VSP), but now the canopy is creeping out to provide some shade. "We have been leafing the morning side of vines," he explains, "but in some vintages it didn't matter which side was





Cabernet Sauvignon vine (10 to 12 years old) spaced 9x6 on Flora Springs hillside terrace on 110-R rootstock; bilateral cordons with 12 two-bud spurs are trained vertically, and organically farmed. Some clusters were removed before harvest to achieve a historical yield average of 2.5 to 3.5 tons per acre. (Photo by John McJunkin)

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leafed, there was some sun damage to totally exposed clusters.

“There has been technical talk recently, that if the row direction is north-south, there is very little time during the day that the total leaf area is exposed to the sun. The optimal leaf orientation is horizontal. Thus, in retrospect, a divided Geneva Double Curtain (GDC) is preferable to a divided lyre because the lyre is just a double VSP. GDC puts the canopy in the horizontal position for leaf area. It was actually Nelson Shaulis (Professor Emeritus at Cornell University, NY) who promoted this decades ago.”

Emmerich adds, “The variety needs to be considered also. Beaulieu and Silverado have the same vineyard management company [Walsh Vineyards Management]. We share a lot of advice. Sauvignon Blanc needs a VSP training system, but Cabernet Sauvignon and other Bordeaux varieties require a modified California sprawl.

“We need to consider the fact that as we were increasing planting density and moving vines closer together, we were also practicing deficit irrigation. We had vine competition with added deficit irrigation. All of a sudden, we had shoots 12 inches long.”

Deis believes that there are greater challenges in strict VSP vineyards than where the canopy has been allowed to flop a little. Flora Springs has discovered that it needs to allow greater flop on the afternoon sun side to protect fruit and is doing less leafing.

“Yet,” Deis adds, “we want to expose the fruit especially if the weather turns colder late in the growing season. All we needed was a few really hot vintages to teach us that we could not let fruit hang out there without leaf protection.”

Training systems in Beringer vineyards are being modified in some cases to provide more shade to the fruit. “That’s especially true,” Hook says, “in some of our mountain vineyards. Modifications are very complicated. There is no one answer; we adjust our farming to individual sites.” If a vineyard is perfectly flat, row direction is easy to manage, but hillside or mountain sites can be more difficult.

Flavor profiles

Are newer clones and rootstocks causing higher sugar levels (and therefore higher alcohol) to get desired flavors?

Stambor believes that there’s been a recent change in the ideal flavor profile. “What makes it frustrating is that the target is ever moving. The system is complex whether it’s vineyards, wine style, or consumer preference. It’s all changing, but the single biggest challenge that I identify is getting riper flavors at lower Brix. All of our efforts in the vineyard, like canopy management and irrigation is all about getting the best flavors at lower Brix. Higher Brix create a lot of issues.

“In the early 1990s, some growers planted French clones based on French

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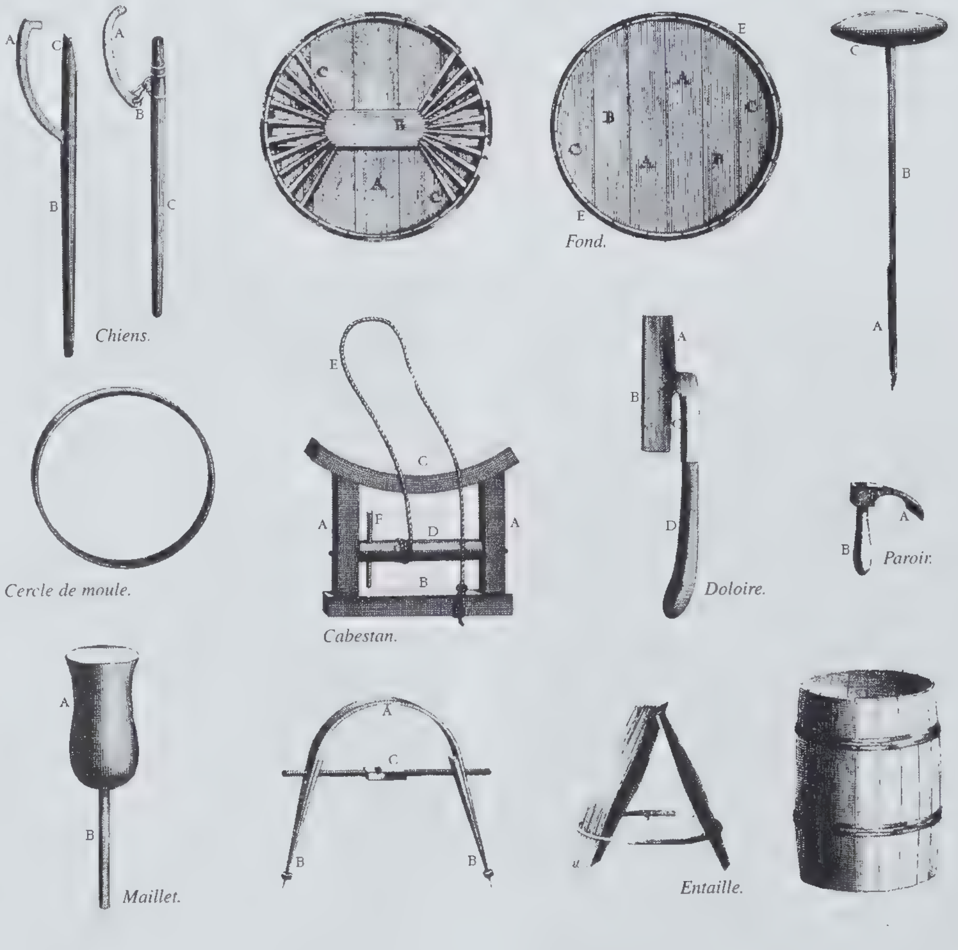

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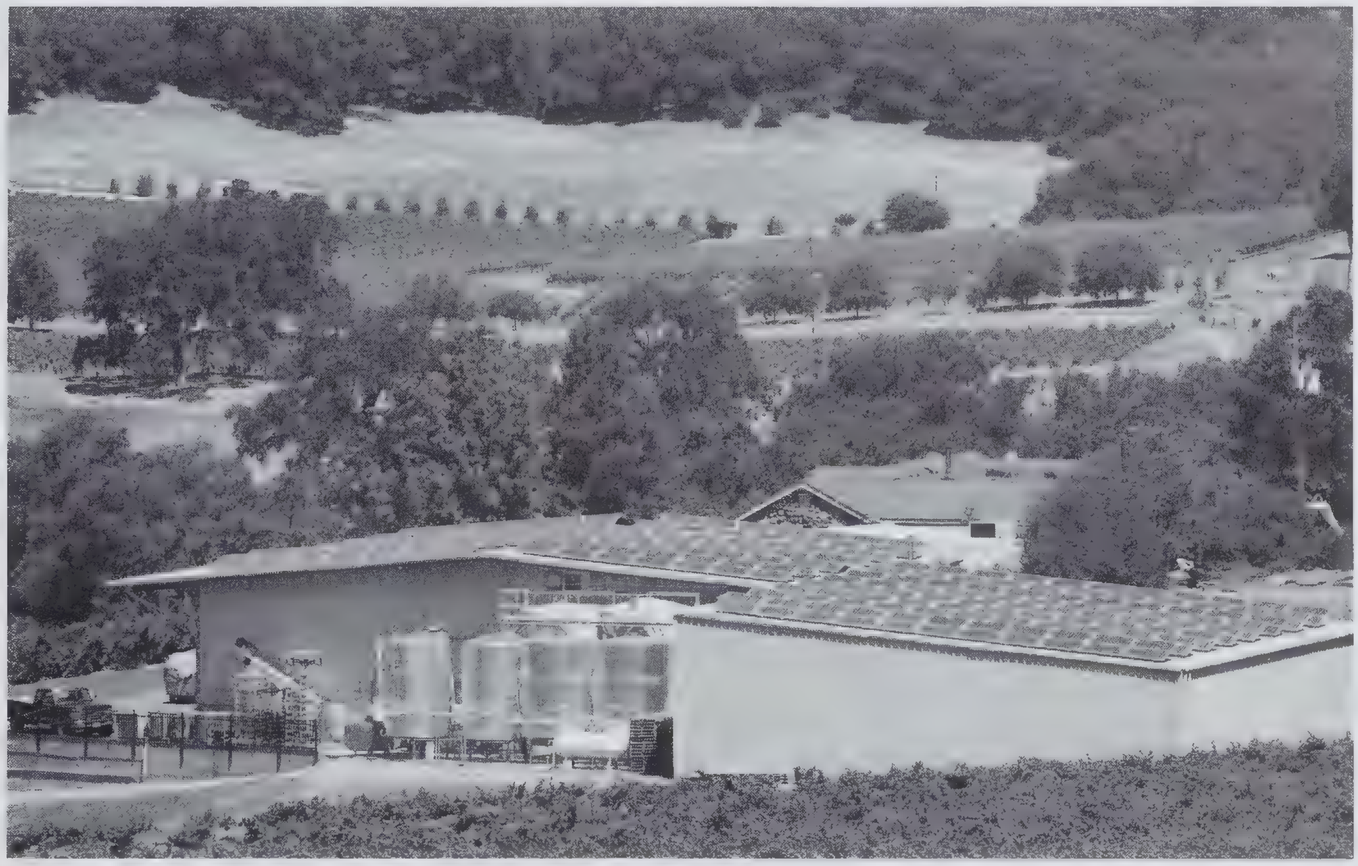

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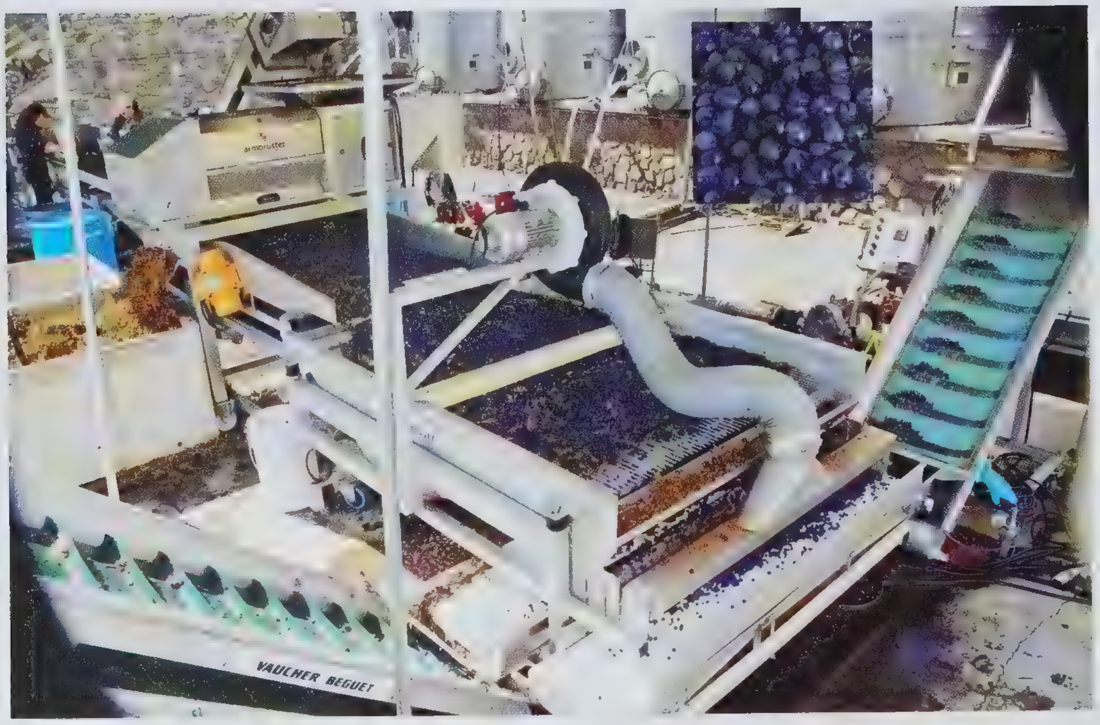

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experience and that simply does not always work under Napa Valley conditions."

Emmerich believes that it also depends on the site. Some of the old UC Davis clones were great on AxR-1 on some sites. "I don't subscribe to the theory that it's the new clones and rootstocks that force us to harvest at higher Brix. It's also a matter of style and personal choice of winemakers. We still try to pick at 24° to 24.5° Brix if we can and the fruit tastes

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ready. We also do lab analysis to confirm our decisions."

Deis adds that, 20 to 25 years ago, grapes were not picked with the same philosophy in mind. Picking was based on Brix. "When I worked at Heitz (before going to Flora Springs), as soon as Cabernet grapes reached 24° Brix, we harvested — period. Now its not just Brix, pH, and TA. It's tannin, seeds, and skin maturity, and a lot of little things. If we could harvest at 23.5° Brix and make 13.5% alcohol wines with the flavors we get now, we'd do it in a second."

Experiments and more

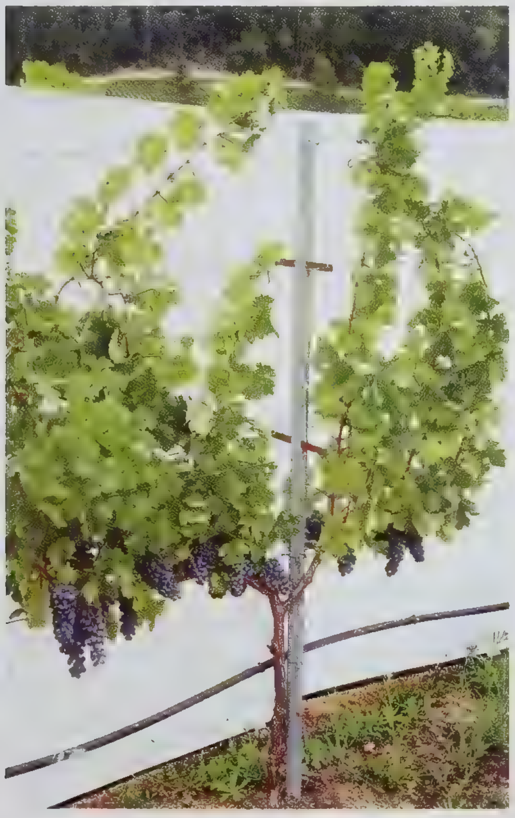
When one block was at 10% veraison in 2006, Beaulieu experimented removing the ripest 10% of the crop and then at 90% veraison, another 10% of the ripest crop was removed in order to narrow the maturity window within the block.

"Everybody agrees," Stambor says, "that you can't get to 24° Brix by harvesting 50% at 22° and 50% at 26° Brix. The 50% at 22° is going to have a larger negative effect than the 50% at 26° is going to have a positive effect.

"In the Beaulieu tasting group, there was unanimous preference for the wine from the test block versus our standard method of green harvest. Because of our success, we plan to repeat the method on a larger test area."

Beaulieu experimented using Normalized Difference Vegetation Index (NDVI) vineyard imaging to determine the need for cover crop based on vigor. In a single tractor row, there may be vegetation up to a point where it's disked in and then cover crop is seeded. Irrigation was tailored to this also.

"This is precision farming," Stambor notes, "all in an effort to achieve uni-



Beringer Vineyards retrofitted many high-end vertically-trellised Cabernet Sauvignon vines, spaced five feet apart with six-inch crossarms, to reduce direct sun exposure to the fruit while creating a more open fruit zone and still maintaining a controlled canopy. [Photo by John McJunkin]

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formity. Cover crop, green harvest, and irrigation are all tools used to achieve uniform maturity."

Emmerich adds, "But again, vintage must be considered. In 2006, cover crop was important because it was a wet season. 2007 was dry so we disked in the cover crop early because I'm concerned about the lack of water. Where the soil changes within a block, it's difficult to get uniform maturity, so we end up picking several times."

Deis believes the irrigation question is similar to cover crops. Irrigation was increased in 2007, but in 2006, there was plenty of water in the soil up to harvest.

"These concepts," Emmerich continues, "are all integrated. It's what makes winemaking fun and challenging. Many little things add up to something huge."

Stambor believes that 95% of the farming and winemaking practices have been figured out but it's the last 5% that are giving winemakers fits.

Hook likens it to medicine where a physician cannot treat just one part of the body because everything is interrelated. Each time one part is treated, it affects another. Curing one problem can potentially create another — it needs to be treated as a whole.

Measuring tannins

At Beringer, Hook maintains that running tannin analysis offers a meaningful comparison for the future that may help determine when to harvest. Yet, fruit is always tasted and skins are chewed prior to harvest. Organoleptic perceptions determine picking time rather than tannin numbers.

"What we've learned," Deis explains, "is that we'd do analyses to get total tannins, phenolics, and anthocyanins. Then we'd go through a maceration, pumpovers, or punch-downs during the winemaking process. Final tannin levels rarely matched what was predicted by the numbers. Sometimes it was more, other times less. We continue to question what sample size is needed in order to obtain an accurate prediction.

"Now, we follow the philosophy that we are making wines from the same vineyards year after year. We know these vineyards and don't need to measure tannins. Based on history,

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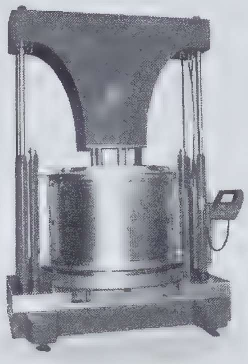
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we can pinpoint acid and tannin just by tasting the grapes. We really don't need all that tannin number information anymore."

Emmerich does not measure tannins before harvest. Analysis is made only on bottled wines.

Fruit sorting

Stambor believes that fruit sorting is important and has noticed a difference in the wine since Beaulieu purchased a sorting conveyor, first used for harvest 2004.

Although sorting tables are used at the winery when needed, Hook believes fruit sorting in the vineyard is the best time to do it. This means training pickers to leave undesirable sunburned fruit, and material other than grapes (MOG) out of bins. "The newest mechanical harvesters are very gentle. In 2006, we had some mechanically-harvested fruit using Korvan equipment and I was very pleased with the result."

Stambor is also pleased with late-model mechanical harvesters and considers them very good when botrytis-infected fruit is present because infected berries fall off the vine in advance of the harvester.

Silverado does not have a sorting conveyor. Emmerich says he talks with the vineyard manager and stresses what he does not want to see in the picking bins when they arrive at the crush pad.

Flora Springs has gone to 100% sorting of all red fruit on a sorting conveyor manufactured by Vaucher Beguet, consisting of a series of shaker tables and an air knife to blow jacks, raisins, or broken skins away. After a day of sorting about 40 tons of grapes, two half-ton bins of MOG have accumulated.

"With our system," Deis explains, "we have two people hand-sorting to remove mostly leaves and the rest is automatic. I honestly believe it's the best piece of equipment for increasing the quality of our red wines."

Winemaking

In the last few years, Stambor says that there has been an effort to apply some Pinot Noir techniques to Cabernet Sauvignon. This has encouraged gentler handling of Cabernet Sauvignon fruit. He has done pre-fermentation maceration (cold soak) with

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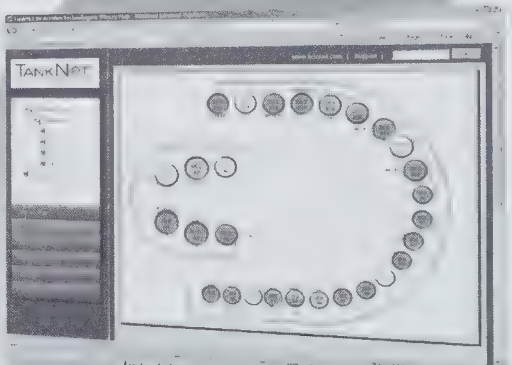

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Cabernet Sauvignon, but it's generally very short, usually two to four days at 50°F with 50 ppm total SO_2 added.

Deis believes that choosing to cold soak or not is site-specific. If tannin levels are high from certain sites, grapes are crushed, put in tank, and yeast is added the next morning.

Cold soak is not a practice with Cabernet Sauvignon at Silverado, but grapes are delivered to the winery fairly cool.

"In the past," Hook says, "we did three pump-overs per day regardless. Fermentors were a little larger than we use today and we did not find we overextracted the fruit. We have always tasted all fermentations daily. Today, we have about 50 five- and 10-ton fermentors and have more control over extraction due to smaller fermentor size. We want to capture all the good characters but not the bad."

Silverado employs an irrigation sprinkler in red fermentors.

"Since consumers are looking for more accessible wines," Deis explains, "we are doing things more gently. We have reduced pump-overs to half or one-third or sometimes less than what we did only a few years ago. We judge each tank individually depending on whether we have attained desired color and tannins."

With respect to maximum fermentation temperature, Hook believes it's connected to tailoring the wine related to desired extraction and adds, "our fermentations typically max out in the mid-80s, measured mid-tank after a pump-over." Other winemakers agreed.

Top-tier Cabernet Sauvignons, such as those discussed/tasted for this varietal review, generally complete MLF in barrel. Although Emmerich does a combination of MLF in barrel and tank, to build mid-palate texture, the wine is retained on gross lees in barrel.

Beringer Cabernet Sauvignon is transferred to barrel at dryness and aged 22 months in 100% new, medium toast French oak barrels. However, it does depend on the vintage. Barrels are evaluated frequently and assessment is made as to whether the wine needs more or less time in barrel.

"Time in barrel relates more to balance than accessibility," Hook explains. "If we assess sufficient oak on the wine, then leaving it longer will only begin to dry it out."

As soon as Flora Springs Rutherford Hillside Reserve is pressed off, it's transferred to one- to three-year-old barrels for the first eight months where it's racked (aerative or protected) three to four times over the first three to five months. Wine is then transferred to 100% new, heavy toast Nadalie cooperage for an additional 12 months.

A portion of Beaulieu Georges de Latour Cabernet Sauvignon is preblended in May or June following harvest. The balance is fine-tuned just prior to bottling. Barrel ageing is a total of 20

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months in cooperage consisting of 52% new (60% French and 40% American). However, Stambor notes that, in the future, Beaulieu is tending toward more French oak for this bottling.

Style

High alcohol levels is a hot topic. "I believe," says Hook, "too much attention can be paid to alcohol level alone — it's a component like others in wine that needs to be in balance." That topic was summarily dismissed and winemakers focused on specific bottlings with respect to style, balance, and authenticity.

Emmerich believes that Silverado Solo represents its vineyard origins in the Stags Leap District and he does not want it confused with any other wine. "We believe it is a very unique bottling.

"It's said that 'local' is the new 'black.' Why do you think that wines of Spain are so hot now? They are new and exciting, with different flavors, and not so homogeneous. If specific vineyards, whether Beringer, Flora Springs, Silverado, or Beaulieu are noted, there are experiences in those bottles that the consumer is not going to find anywhere else."

Similarly, Stambor notes that the Georges de Latour wine has been made since 1936. "There is a house style and the basis comes from the vineyard.

"Definition of quality is constantly evolving. Yet there are not dramatic shifts in style. Winemakers at this table have long experience at their respective wineries, so the wines have evolved into a 'chateau model' if you will, rather than 'who's the winemaker of the year.' The continuity of styles and winemakers at these four wineries is akin to an old world philosophy. This results in a house-recognizable style rather than a winemaker style."

"The best wine speaks to the place where it is grown," Hook confirms. "We attempt to showcase the unique character of a site without imposing a winemaking style that does not suit particular fruit. Our intent is to make wine that is authentic to our vineyard sites."

Last drop

When California Cabernet Sauvignon is considered accessible, it seems also to equate to approachable and yet, neither of those words takes a period in the wine's life into account. Apparently though, the wine world has come to additionally equate accessible and approachable with drinkability upon release.

Bordeaux grapegrowing techniques are fixed by law, so achieving accessibility, approachability, or drinkability, whichever one decides to call it, through vineyard practices are limited. Bordeaux winemaker/consultant Olivier Dauga approaches achievement of an accessible Bordeaux blend, principally through winemaking techniques.

The four Napa Valley winemakers who participated in this discussion for

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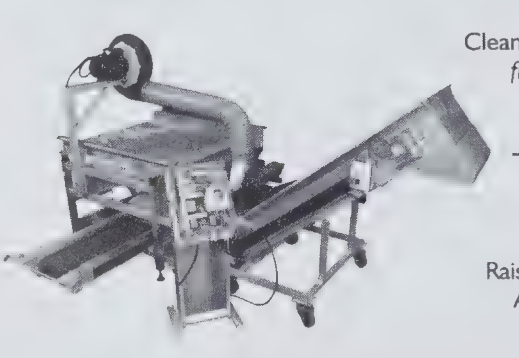
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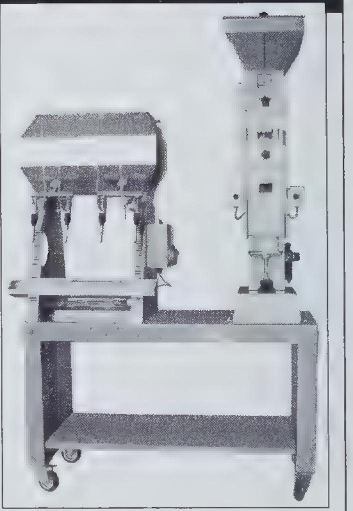
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PWV, concentrate principally on site-specific vineyard practices which allow them to produce balanced wines with authenticity.

If local is the new black as Silverado winemaker Jonathan Emmerich claims, balance is the new accessible. Achieving it involves both vineyard specifics and ever-watchful skillful winemaking, mindful of both vintage and site particulars. ■

TASTING NOTES

2003 Beaulieu Vineyard Georges de Latour Cabernet Sauvignon, Napa Valley $95 (12,000 cases)

Color/Aroma: Dark blackberry, blueberry, black cherry, currant, spice, and mocha.

Flavors: All black fruits, currant, cassis, chocolate, slightly herbal, black olive, slightly tight; flavors mirror aromas.

Balance/Finish: Bright fruit attack, great density, excellent balance with hints of American oak showing.

2003 Beringer Private Reserve Cabernet Sauvignon, Napa Valley $115 (10,200 cases)

Color/Aroma: Dark cherry/berry, cassis, allspice, cedar, anise, coffee, well integrated, and toasty vanilla.

Flavors: Bright and dense fruit, cassis, nice spicy oak, sweet attack, and broad across the palate.

Balance/Finish: Rich, ripe chewy tannins. Excellent balance and bright, long finish, silky and broad.

2003 Flora Springs Rutherford Hillside Reserve Cabernet Sauvignon, Napa Valley $100 (450 cases)

Color/Aroma: Evolved, ripe blackberry, cherry plum, nutmeg, coffee, slightly herbal, and spicy soy.

Flavors: Blackberry, cherry, plum, roast coffee, and mature flavors.

Balance/Finish: Elegant, ripe, supple tannins, long and beautiful fruit finish, full-bodied and viscous.

2003 Silverado Vineyards Solo Cabernet Sauvignon, Napa Valley Stags Leap District $80 (1,400 cases)

Color/Aroma: Dark berry, black cherry, cassis, lavender, slight cedar, and slightly herbal.

Flavors: Elegant bright fruit, nice density, juicy, youthful, cherry, raspberry, slightly chalky, and chocolate.

Balance/Finish: Unique leaner profile, higher acid yet good balance, long and flavorful finish.

PWV thanks Beaulieu Vineyard Rutherford House for hosting the tasting/discussion.

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BY Clifford P. Ohmart, Lodi-Woodbridge Winegrape Commission

Winegrowers in the Lodi-Woodbridge region, who are implementing environmentally-sustainable farming practices, can now market their wines as certified under the Lodi Rules for Sustainable Winegrowing.

Introduced in 2005 and still the only peer-reviewed standards for sustainable winegrowing in California, the *Lodi Rules* were developed by the Lodi Woodbridge Winegrape Commission. Vineyards following the program receive third-party certification by Protected Harvest, a nonprofit organization (www.protectedharvest.org). A complete description of the *Lodi Rules* program can be found at www.lodirules.com.

Six growers joined the program in 2005, achieving certification on 1,455 vineyard acres. Twelve growers participated in 2006 — six additional growers joined the original growers, certifying 5,424 acres. There are now more than 7,000 certified vineyard acres, with five to seven additional growers who joined the program in 2007.

More than 40 wineries currently make wine from certified grapes. In 2007, Michael-David Vineyards (Lodi, CA), became the first winery to offer contracted growers a $50/ton bonus if they qualified for the *Lodi Rules*-certified program.

Five wineries have received permission from the U.S. Department of the Treasury Alcohol & Tobacco Tax and Trade Bureau to use the *Lodi Rules* logo on wine labels: Herzog Wine Cellars (www.herzogwinecellars.com), Bokisch Vineyards & Winery (www.bokischvineyards.com), LangeTwins Winery & Vineyards (www.langetwins.com), St. Amant Winery (www.stamantwines.com), and Lobo Loco Winery (www.lobolocowines.com).

Wines bearing these labels are bottled and entered the marketplace before the end of 2007. Now that *Lodi Rules*-certified wines are available for purchase, what are the sustainable farming practices that growers implement in order to qualify for certification?

Qualifying for certification

Two criteria must be met for a vineyard to qualify for certification, and each vineyard must qualify every year.

First, a grower must address 75 farming standards in six sections of the *Lodi Rules*, which are: Ecosystem Management; Education, Training and Team Building; Soil Management; Water Management; Vineyard Establishment; and Pest Management.

Second, the PEAS (Pesticide Environmental Assessment System) environmental impact units (EIUs) for all pesticides used in the vineyard during the year, whether organically-approved or conventional, cannot exceed 50 (Ohmart et al., 2006; www.lodirules.com).

This space does not allow discussion of all farming practices that growers use to qualify for certification. Below, to demonstrate what is required, are some practices that three growers use. To be as comprehensive as possible, some practices are described from five sections of the *Lodi Rules* farming standards. No practices in the Vineyard Establishment section are reported because no growers have yet certified a vineyard starting from the date of its establishment.

Growers interviewed were: Markus Bokisch, Bokisch Vineyards & Winery; Aaron Lange, Lange Twins Wine Estates; and Bruce Fry, Mohr-Fry

Ranches. Bokisch and Lange have their own wine labels. Mohr-Fry's certified old vine Zinfandel vineyards provide grapes for several wineries, including St. Amant, which released a *Lodi Rules*-labeled Zinfandel in 2007.

Creating a sustainability vision for the farm

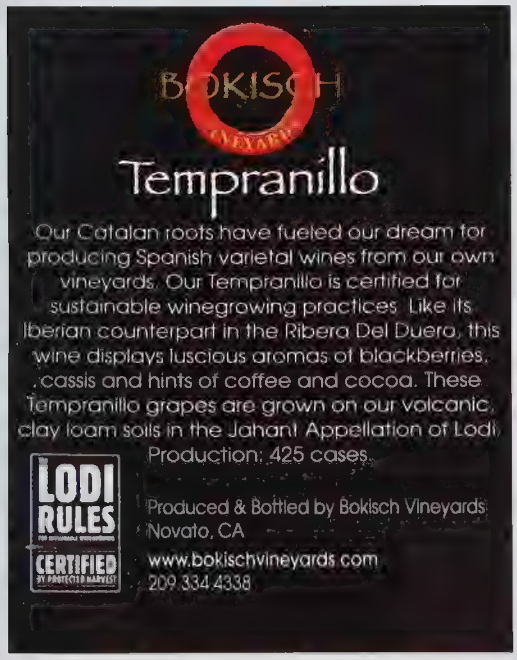
The first standard in the *Lodi Rules* requires each grower to write a sustainable management vision for their farm. This vision provides the foundation for the grower's sustainable winegrowing program. Sustainable winegrowing is more than a laundry list of practices one uses in the vineyard. There must be a vision to ensure the long-term health (economic, environmental, and social), biodiversity, and productivity of the farm.

Once written, each farming practice implemented in the vineyard can be evaluated as to whether it moves the grower toward or away from their vision. However, because a specific practice does not move one toward the vision, does not necessarily mean it should not be done. Just knowing where it fits into the sustainability vision for the farm is important for achieving the goals of the vision.

The process a grower goes through to develop a sustainability vision is important and challenging. One of the requirements for *Lodi Rules* certification is that a grower attend a half-day workshop to learn strategies for developing a vision.

Through a facilitated process, a grower is taken through a series of steps to create a vision, which includes defining their resource base and developing one or more sustainable goals. For each goal, they develop objectives, strategies to achieve them, and a monitoring scheme to determine if the goal has been met.

Ideally, a sustainability vision is developed collectively by key people in the farming operation and then shared with other family members and/or employees. A detailed guide for developing a sustainability vision for one's farm is presented in the *Lodi Rules* Companion Document (http://www.lodiwine.com/4_4_The_Lodi_Rules_Companion_Document.pdf).



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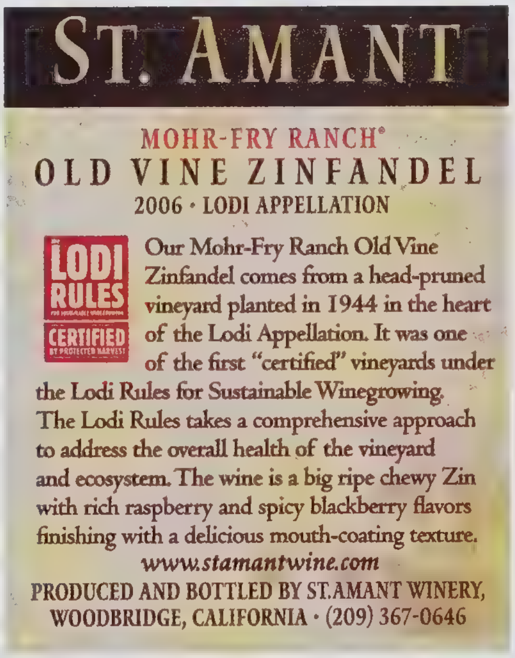

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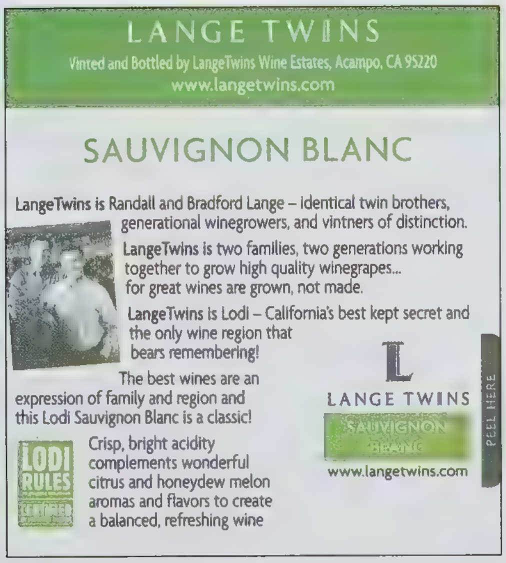

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It is difficult for anyone not having experienced the vision-development process to appreciate its importance. I will try and convey this by describing how it has affected the farming operations of Bokisch Vineyards & Winery.

By developing a sustainability vision for his vineyards, Markus Bokisch realized that he held the keys to creating buy-in from all the parties connected to his farming operation, from his family and employees to the financial partners in some of his jointly-owned vineyards.

Bokisch already had sustainability goals prior to joining the *Lodi Rules* program. However, the vision and the process he went through to create it as part of the program helped him to bring all of the people involved in his farming operation together to achieve those goals.

For example, by sharing his vision with financial partners in some of his vineyards, he was able to convince them of the importance of investing in improving wildlife habitat by putting up owl boxes, bat boxes, songbird boxes, and wood duck boxes, and establishing hedgerows around vineyards and planting more oak trees. (See page 42).

Furthermore, by sharing his vision with vineyard workers, he helped them appreciate their vital role in producing the highest quality winegrapes possible. He can trace the effects of the vision to the wine quality produced from certified vineyards because the workers have taken added pride in the work they do, from leaf removal to shoot-thinning, knowing they are major contributors to wine quality.

Ecosystem Management

Development of the sustainability vision helped Bokisch justify to his investors the importance of improving the farm's ecosystem. During past and current vineyard development, existing oak trees have been left with large, unfarmed buffers around them. If trees are 75 feet apart or closer, they are left together with no vines in between them.

Large buffers are left around vernal pools and swales. Bokisch developed a reforestation plan to establish corridors of native trees and shrubs from local seed sources of blue oak, California buckeye, Valley oaks, redbud, and sycamore. Species will be planted in ecologically-appropriate areas on vineyards. Hedgerows are being planted in strategic locations to attract songbirds.

At LangeTwins Winery & Vineyards, an important part of the Ecosystem Management component of the *Lodi Rules* is restoring riparian habitat along the rivers and creeks on their vineyards. It is also a vital part of their sustainable vision.

Two important waterways cross through some of the property they manage, the Mokelumne River and

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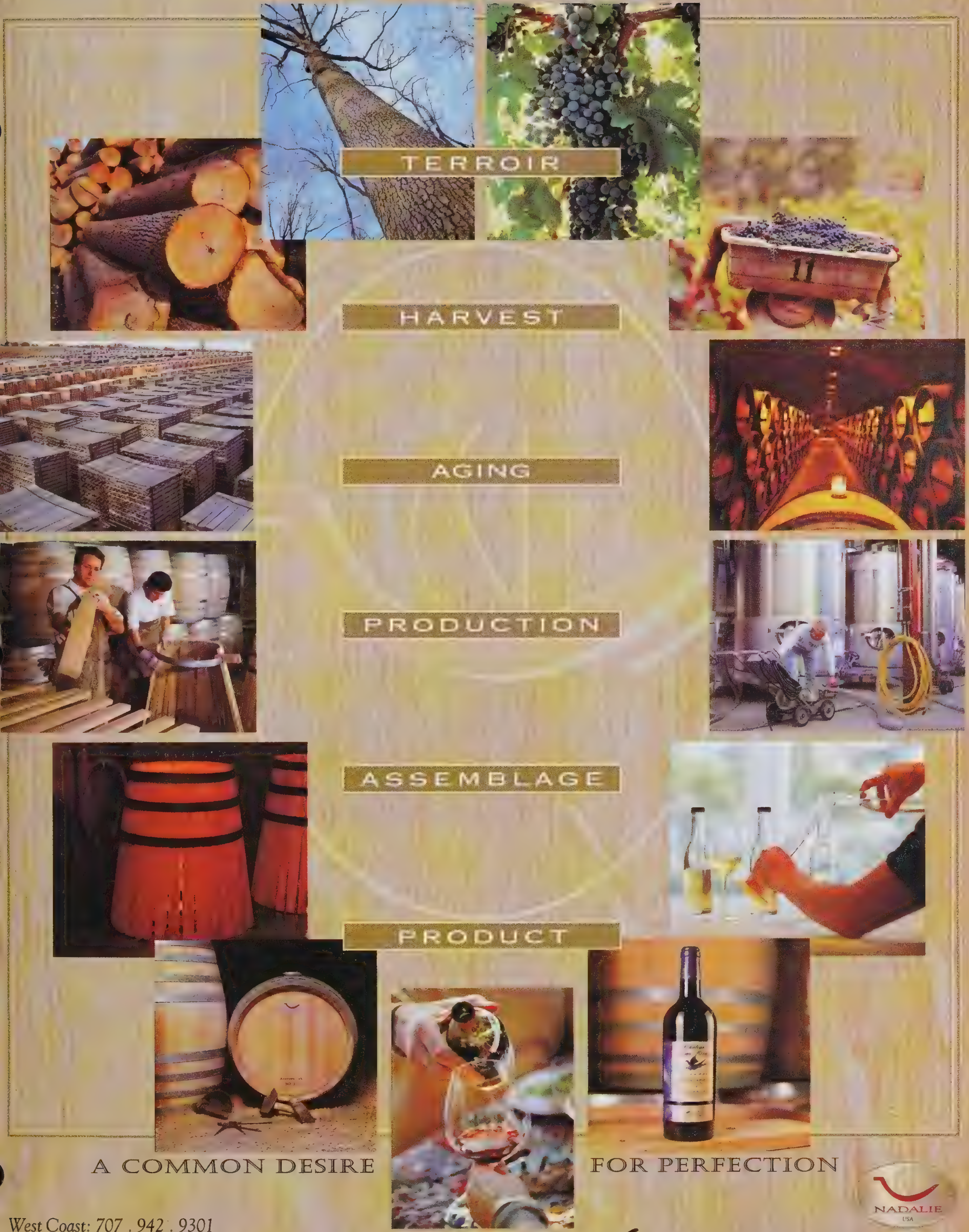

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Gill Creek. Several years ago, they restored riparian habitat along a significant portion of Gill Creek, which is adjacent to a Chardonnay vineyard, and that was entered into the *Lodi Rules* program for acceptance in 2007.

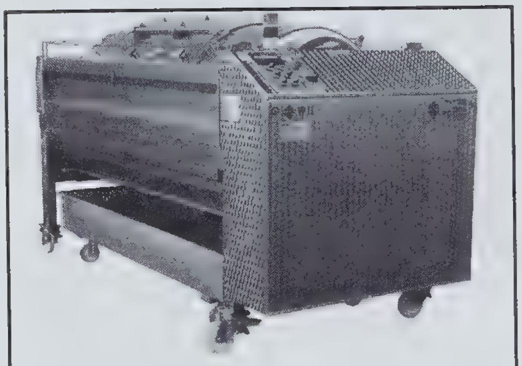
They are currently restoring riparian habitat on a section of the Lower Mokelumne River on their headquarters property. This work includes removing some vineyard acres and re-establishing native riparian plants. It also involves installing a bat "condominium" capable of housing 10,000 bats (Figure III). In recognition for their past and current conservation work, Brad and Randy Lange were awarded the first Leopold Conservation Award for California in December 2006 (http://sandcounty.net/programs/landholder/LCA/).

Ecosystem Management is made up of many small steps. After joining the *Lodi Rules* program, Bruce Fry installed owl boxes and bat boxes in all certified vineyards. Furthermore, since there are electrical power lines traversing one site where several of the certified old vine Zinfandel vineyards are located, he convinced the power utility to put up perches on the power poles for red-tailed hawks. Since some birds were injuring themselves on the power lines, he had the company install measures to prevent these injuries from occurring.

Education, Training, and Team Building

This section of the *Lodi Rules* farming standards stimulated Bokisch to better engage and support his employees. For example, meetings occurred with employees in management positions to discuss why things are done, to better visualize what needs to be done, and to then efficiently and effectively carry out the work.

Health care coverage is provided to key employees. Bokisch codified worker training meetings, making



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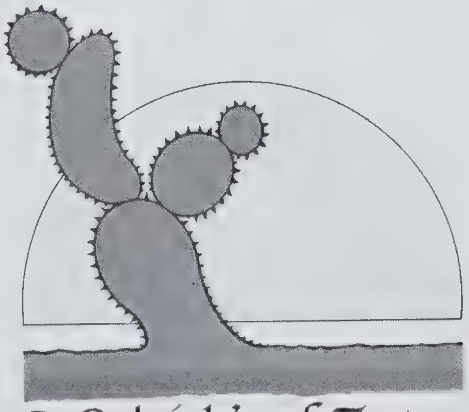

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them more frequent and consistent, and recorded them for future reference. Developing a sustainability vision has inspired development of quantitative standards within the farming operation that help workers identify what skills they need to acquire in order to move to the next pay level. Furthermore, English classes for his workers and their families will be offered in 2008.

Bokisch concluded that the human element is the single greatest factor in improving wine quality. Having employees share in the sustainability vision results in a more consistent performance of duties, whether it be shoot-thinning, leaf removal, or pruning. Greater attention to detail is achieved through worker satisfaction.

One of the farming standards in the Education, Training, and Team Building section of the *Lodi Rules* is development of a Human Resources Plan. The Langes have always recognized the importance of enhancing human resources as an integral part of a successful business, and participation in the *Lodi Rules* has increased this focus. They have created a staff position devoted to human resources as a part of their Human Resources Plan.

Mohr-Fry Ranches has also long recognized the importance of the human element in farming operations and the production of quality winegrapes. The Frys have strived to create an open communications environment where workers feel free to express their opinions on how tasks are done.

The Frys have paid particular attention to farm safety and are big supporters of and participants in Lodi Farm Safety Day. This Lodi Chamber of Commerce-sponsored event, that has occurred for 15 years, is planned and carried out by the staff of many Lodi farming companies, including Mohr-Fry. Each year, over 500 employees are trained to be a pesticide applicator.

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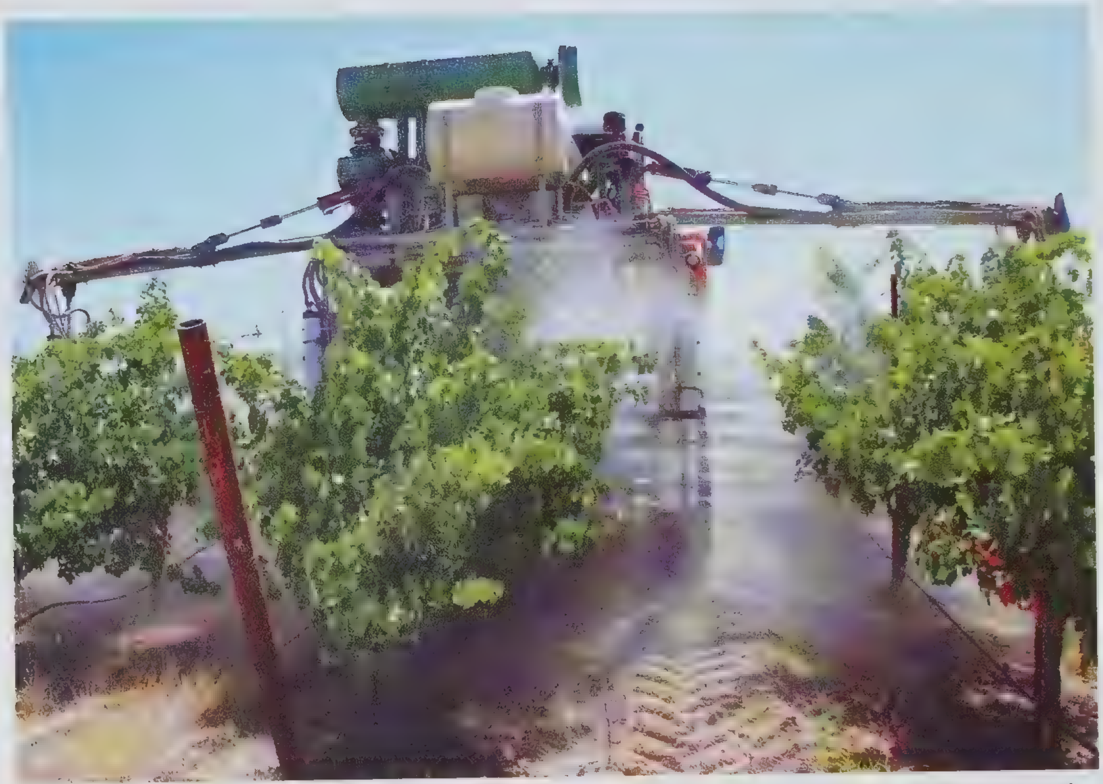
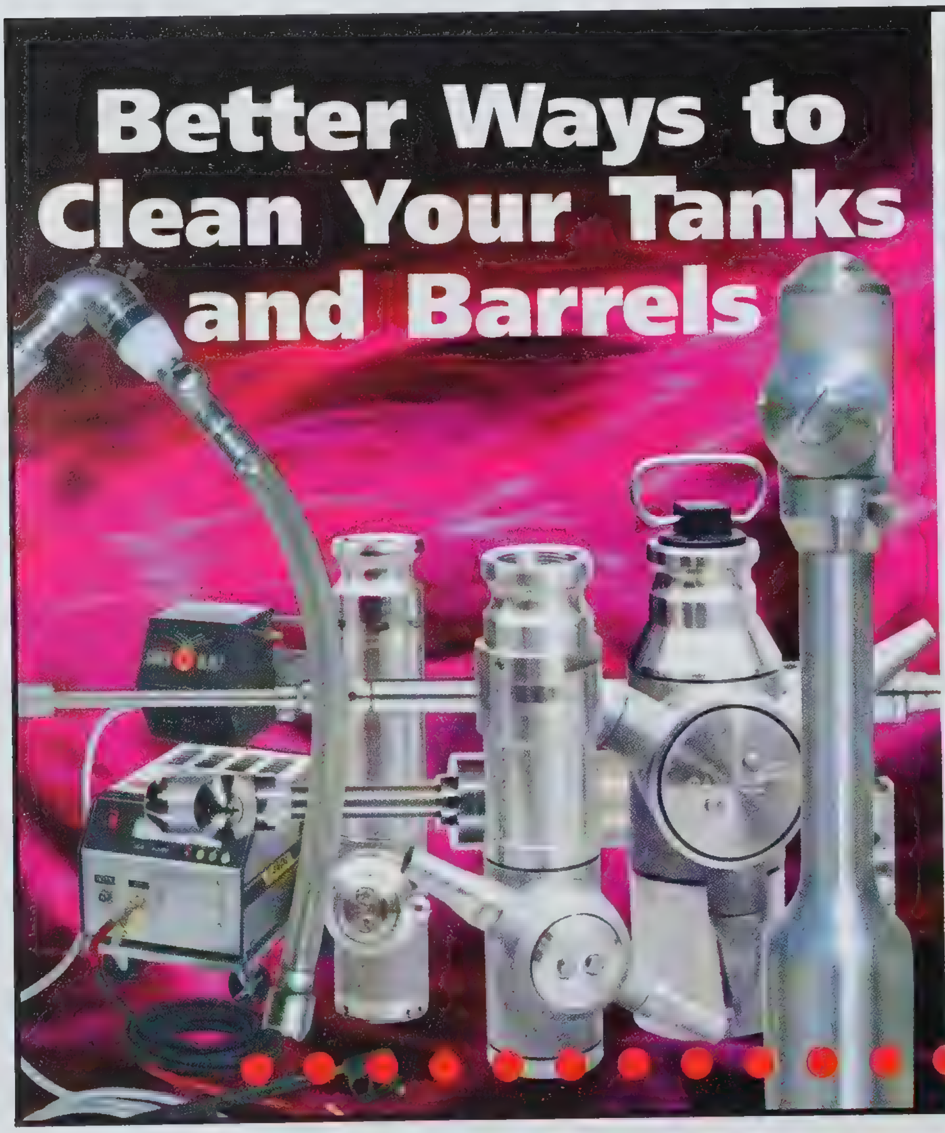


Over-the-row electrostatic sprayer at Lange Twins Wine Estates reduces soil compaction and fuel consumption by spraying four vine rows at once, achieving better coverage with a low rate per acre of fungicide application.

Adjustable width (8 to 11 feet), spring-engaged, berm mulching mower with 3 mph speed, in Bokisch Vineyards.



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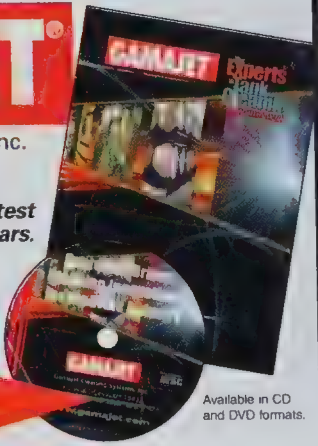

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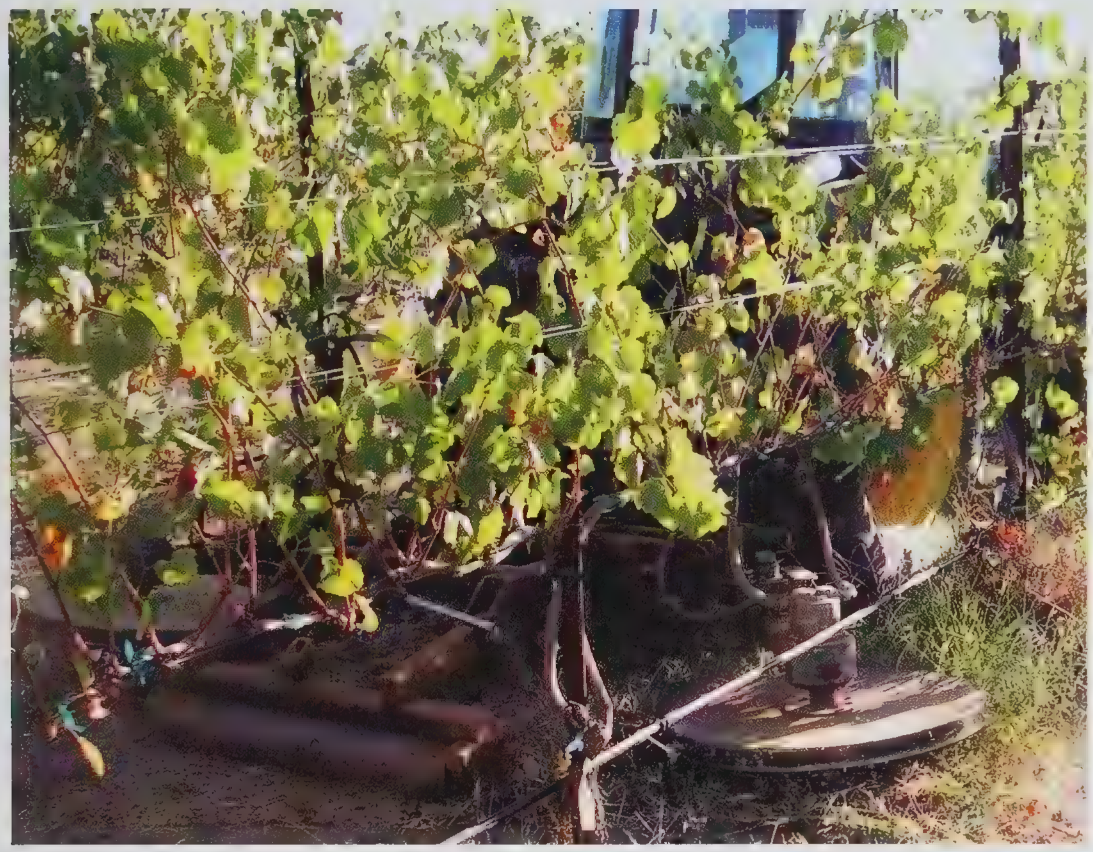
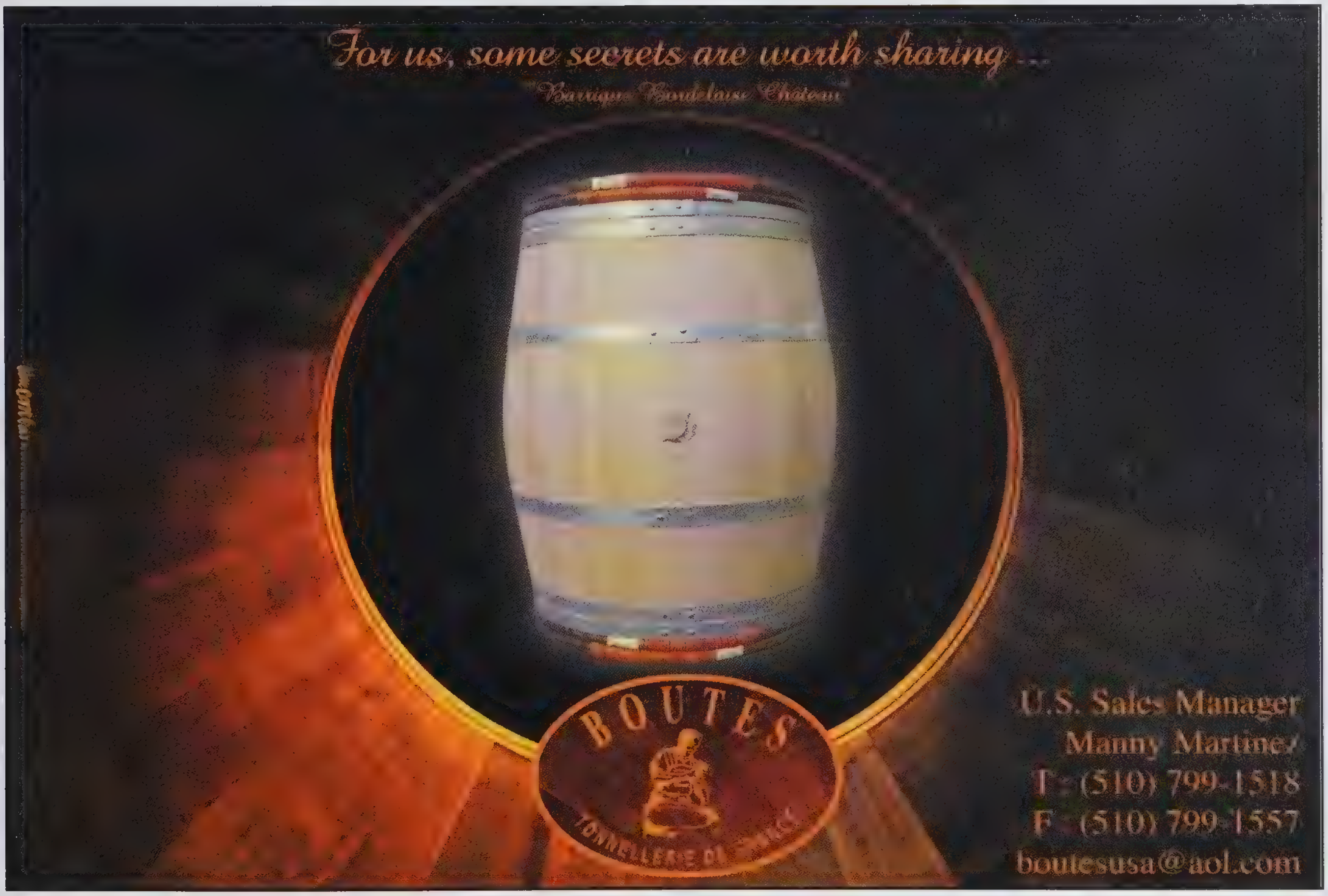


Steel, circular cover plates protect Bokisch vines from mulching blades and protect driver from flying debris. Back-mounted roller adjusts cutting height above ground eliminating soil disturbance, allowing use on flat and uneven ground. Hydraulic mower heads on each side of tractor can be angled for multiple-aspect berms.

Seven farm safety modules (taught in English and Spanish), include: pesticide protective equipment, first aid, mixing/loading amd cleanup/disposal, leaks and spills, environmental protection, calibration and application equipment, and sulfur stewardship.

Mohr-Fry Ranches is also a sponsor of Ag Safe, a statewide safety organization. They have sent two employees to the annual conference for many years. Mohr-Fry Ranches has two employees dedicated to address human resource issues.



Soil Management

Vineyard floor management is an important element of the Soil Management component in *Lodi Rules* vineyards. The specific strategies used depend on the winegrape variety, vine vigor, and soil type.

In the Bokisch *Lodi Rules* vineyards, the goal is to never expose more than 40% of the soil to discing in any given year. In some tractor rows, an every-row permanent cover crop is maintained while in other vineyards, where the site is less vigorous, an alternate-row cover crop is maintained. Cover-cropped tractor rows are mowed twice per season and the tilled rows are disced two or three times, just enough to break up the soil, while minimizing dust creation.

Bokisch's primary motivation for using cover crops is to create a cleaner, healthier work environment for employees by minimizing the amount of dust generated as a result of farming practices. A secondary goal is maintaining good soil structure with healthy soil microbial communities, and maximizing soil organic matter, all of which are enhanced by permanent cover crops and minimal soil disturbance. The cover crop species are short-stem annual rye, subterranean clovers, and California poppies for a bit of color. There are also permanent cover crops on vineyard headlands and avenues.

Some of Bokisch's *Lodi Rules* vineyards, which are farmed organically, have wall-to-wall cover crops that are mowed twice per season in tractor rows and up to four times under the vine with a mower developed by the Bokisch mechanics. (The mower can be seen in vineyard, page 39.) The challenge was to develop a mower that cuts cleanly around the base of the vine. The latest version of the mower, built in 2007, appears to have met this challenge (see page 38).

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LangeTwins Winery & Vineyards maintains alternate tractor row cover crops in their *Lodi Rules* vineyards. The Langes discovered that maintaining a permanent cover crop in every row was resulting in an unacceptable decline in vine vigor. As does Bokisch Vineyards, the Langes mow the cover-cropped tractor rows twice per season and disc the other tractor rows three times, at most.

Mohr-Fry maintains an every-row permanent cover crop in all of his *Lodi Rules*-certified old vine Zinfandel vineyards. This a particularly challenging situation because the vines are very old, from 60 to over 100 years, and the vines are on their own roots.

The primary reason for using no-till floor management is for dust control, but soil quality and better equipment access during winter months is also important. Mohr-Fry was able to move to no-till floor management in these vineyards when underground drip irritation systems were installed (see below).

Water Management

From the perspective of sustainability, water management means minimizing water use. From a wine quality perspective, at least in the Lodi region, irrigation is one of the most important tools a grower can use to improve winegrape and wine quality. For example, in the Lange's *Lodi Rules* vineyards, irrigation management is the primary tool for achieving vine balance.

The Langes do very little leaf removal or shoot-thinning, choosing to manage the vine canopy vigor primarily through careful monitoring of vine water use with neutron probes, the pressure chamber, and in-vineyard weather stations. Using this information, they irrigate to achieve a uniform, balanced canopy with proper fruit exposure. Mechanical pre-pruning will be used in the *Lodi Rules* vineyards after the 2007 harvest.

Mohr-Fry Ranches installed subsurface drip irrigation down the center of tractor rows in all of their *Lodi Rules* old vine Zinfandel vineyards. Managing irrigation in this manner has had multiple positive effects.

First, it has allowed them to grow a permanent cover crop (Merced Rye seeded in 1998), that is mowed three or four times per year, and the vineyards have not been disced since 1998. The cover crop adds organic matter to the soil and non-tillage results in improved soil structure and a healthier soil microbial community.

Second, no irrigation under the vines means that weed pressure has greatly decreased since installation of the subsurface drip. The application of an environmentally problematic pre-emergent herbicide (Simazine), has been replaced by a contact-herbicide program that requires only one winter application of Roundup (Glyphosate) and Chateau (Flumioxazin), and one in-season (May) application of Roundup. Both applications have very low PEAS impact units.

An Enviromist spray dome with a controlled droplet application (CDA) system is used in May. The sprayer has a patented system combining low spray pressure, low volume output, with a spray dome that all combine to minimize spray drift. Moreover, the CDA system uses a spinning disc rotary atomizer to produce optimum size, evenly distributed spray droplets which minimizes chemical waste, spray drift, and operating down time of refilling the sprayer tank.

The presence of a permanent cover crop also allows much better vineyard access with equipment during wet winter months. (Page 32 — Mohr-Fry DeVries Road vineyard in winter)

All three growers have installed photovoltaic solar power systems to provide electricity not only for the pumps in their *Lodi Rules* vineyards, but also for the shops or houses present on the vineyard sites.

Pest Management

Pesticide use in *Lodi Rules*-certified vineyards is regulated through the PEAS model requirements. It ensures that only low-risk pesticides are used, whether organic or conventional, and that even a low-risk pesticide, such as sulfur dust, cannot be over used.

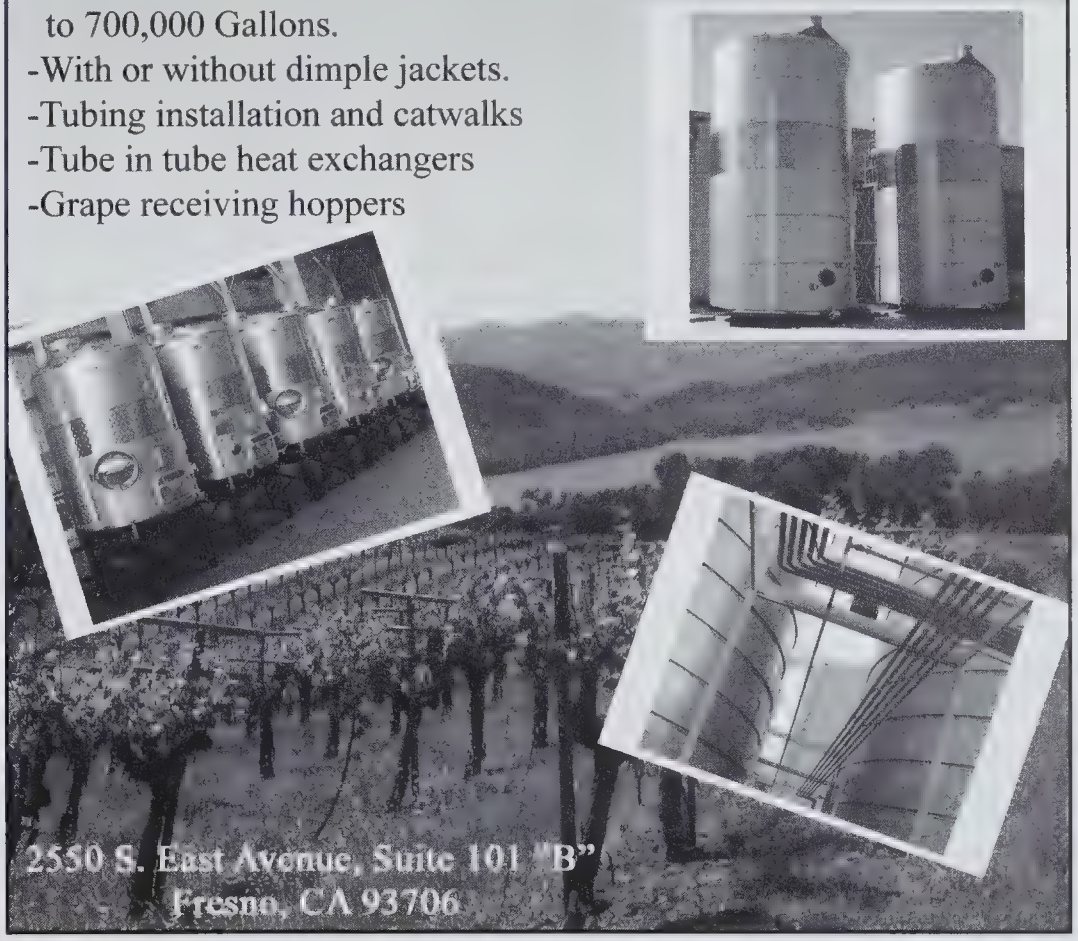
In some vineyards, use of the PEAS model has not resulted in a change in pesticide use because growers were already using materials with very low environmental impact, such as sulfur dust and one or two low-risk contact herbicides. However, because the PEAS model provides a quantitative measure of a pesticide's environmental impact, some growers, like Bokisch, pick the materials with the lowest PEAS numbers even though they are under the required PEAS threshold, because they want to lower the environmental impact as much as possible.

On the other hand, pesticide use in some vineyards has changed markedly as a result of joining the *Lodi Rules* program. For example, Bruce Fry was using Nemacur in old vine Zinfandel vineyards prior to certifying them. Since these vines are on their own roots, nematodes are a significant problem. However, to qualify under the PEAS model requirements Fry stopped using Nemacur. He now manages the nematode problem through a vineyard nutrient program.

The vineyards have been enrolled in a Western Farm Service crop-monitoring program for five years. Petiole samples are taken from each vineyard up to six times each year. Samples are taken in May through July, usually twice each month. Many nutrients are monitored for trends of use by the vines.

By watching the trends year-by-year, Fry can predict when the vines use certain nutrients. For example, right after bloom, there is a huge demand for nitrogen. A blended application of calcium nitrate, boron, iron, copper, and sulfur is made, through the subsurface irrigation system, just before berry set. By following these trends, the appropriate amount of fertilizer is applied at the correct time of the year, that will have the optimum effect on vine health and grape quality.

Soil samples for fertility and nematode-monitoring are taken and integrated into the crop monitoring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program, that is done every three years.

Lange Twins Wine Estates has made a major investment in developing an electrostatic spraying system mounted as a modular unit on an over-the-row grape harvester (see page 38). Recognizing that spraying for pests was always going to be a necessity in some vineyards, they realized that sprayers could be developed that reduce the environmental impacts of spraying in many ways:

- The sprayer covers four rows per tractor pass, which reduces fuel consumption and dust in the air, particularly when compared to that produced by an air-blast sprayer.
- Soil compaction is reduced because the machine is traveling down every fourth row and the tires are in the middle of a tractor row.
- The per acre rate of many pesticides can be reduced by more than half and still be effective because of better spray coverage.
- Water is applied at 17 gallons per acre so mixing and loading is dramatically reduced.
- The driver is riding in an enclosed cab with a carbon-filtered air conditioning system.
- The technology of the equipment requires a more highly trained operator, who can be paid a better wage to operate it.

Conclusion

This article provides a sample of the many practices Lodi growers use to qualify for certification under the Lodi Rules program. For a complete listing of the practices visit http://www.lodiwine.com/lodirules_farming_standards1.shtml.

The *Lodi Rules* program has the potential to benefit every part of the value chain from the vineyard to the consumer. It is hoped that Lodi growers will receive a premium for their grapes because of the high quality and practices used to grow them.

A bat "condominium" capable of housing 10,000 Mexican free-tailed bats placed adjacent to the vineyard in riparian habitat.

Wineries can add value to their wines by using high-quality certified grapes and marketing their wines using the *Lodi Rules* logo on their labels.

Wine gatekeepers can increase wine sales by selling great wines with an interesting story behind them, and the consumer can enjoy great wine and feel good because their purchases help growers farm more sustainably. ■

Reference

Ohmart, C.P., C.P. Storm, and C.M. Benbrook, 2006. "Lodi Rules certification advances sustainable viticulture." *Practical Winery & Vineyard* 27(6): 7–23.

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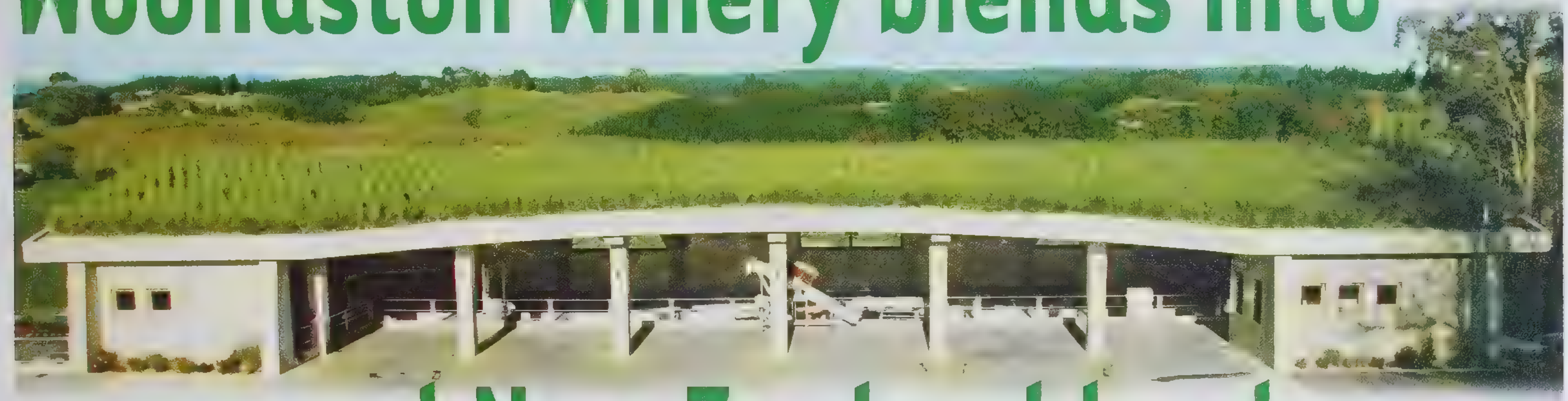


ABOVE: Grape receiving (highest level). Administration building and winery feature "eco roofs" planted with native tussock grasses. Press room (left); winemaker's office (right). Photo by Elspeth Collier.

**BY Laurence Ferar,
Laurence Ferar & Associates, Inc.
Portland, OR**

Nestled into a hillside, with a roof garden of tussock and shrubs, the Woollaston Estates winery (Nelson, New Zealand) is designed for high-quality wine production, while providing an inviting venue for wine-related events.

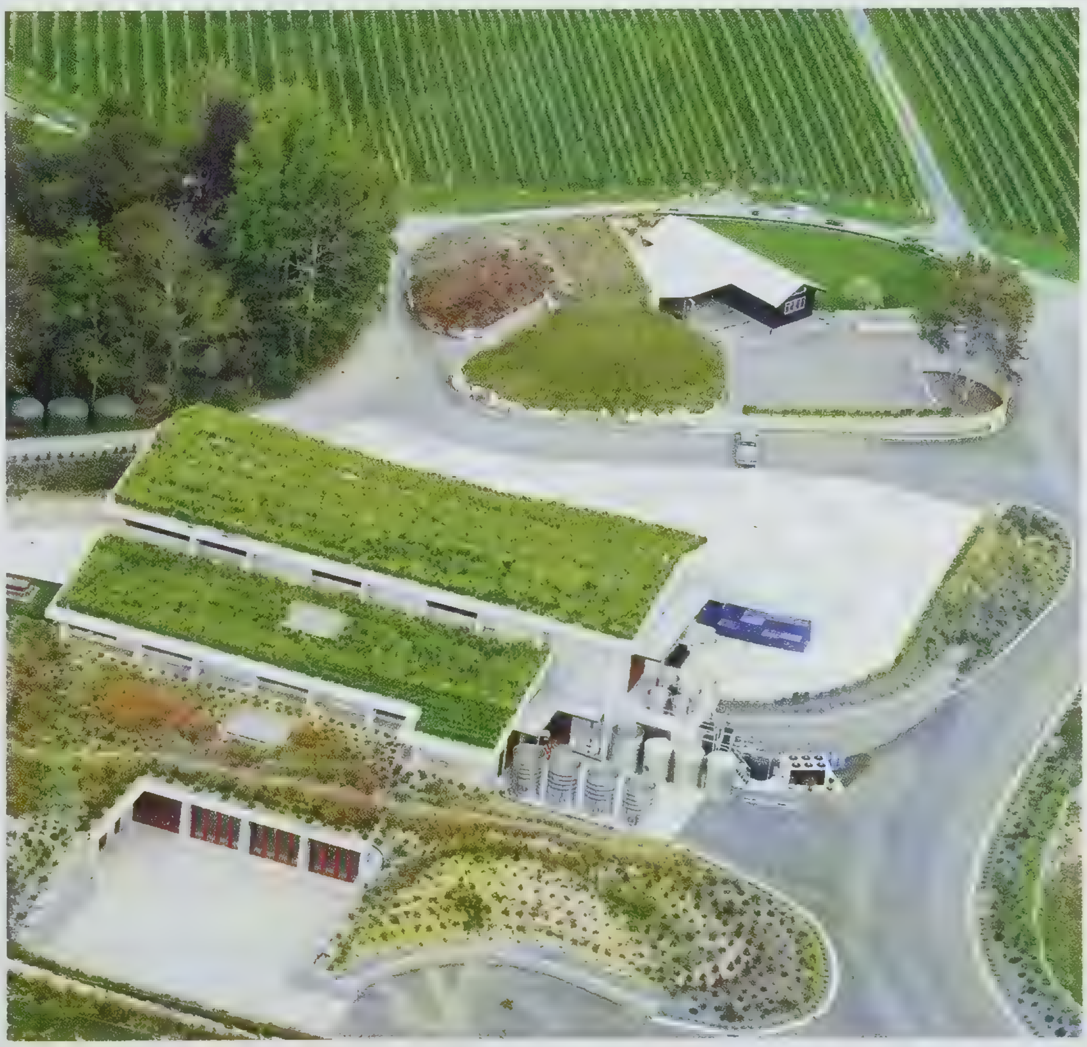
After a 22-year career in New Zealand politics and government, Philip Woollaston and his wife Chan formed a partnership with American businessman Glenn Schaeffer in 2000, to expand a small family vineyard to a 250-acre estate in Mahana (across the bay from the city of Nelson), on the northern tip of South Island, New Zealand.

Nelson is a picturesque port on Tasman Bay. It is protected from the prevailing westerlies by a range of hills and is reputed to have more sunny days than any other New Zealand region. The neighbouring countryside has long had many orchards, but only recently have vineyards been planted.

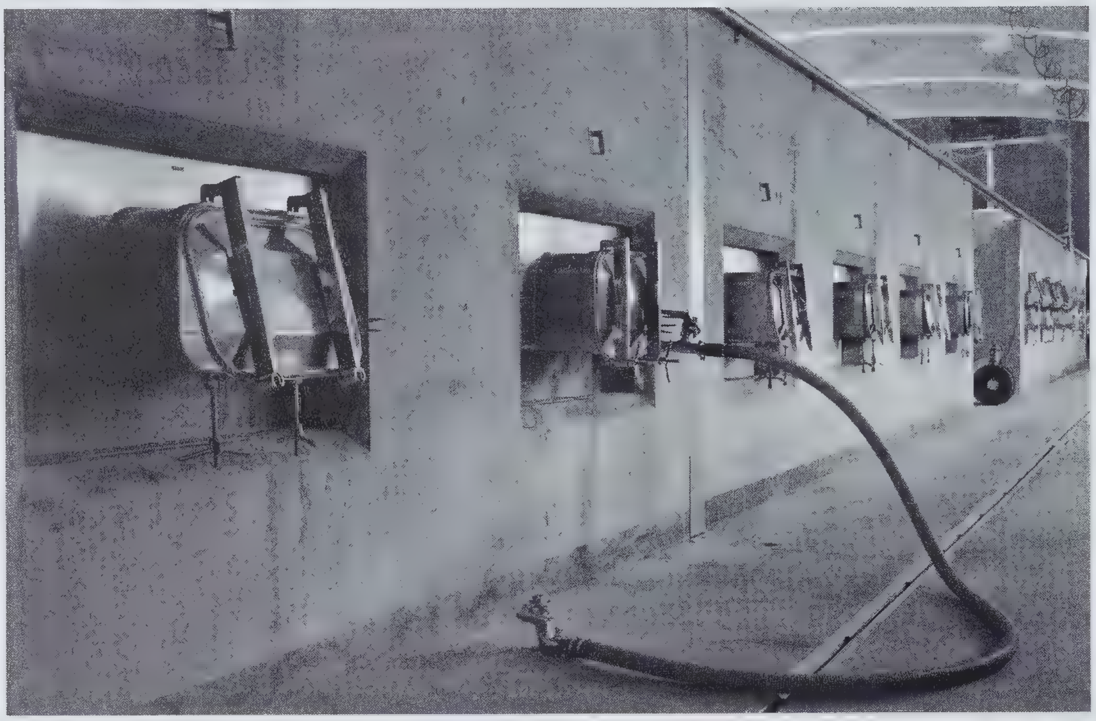
Beginning in 2000, the Woollaston vineyards were planted to Pinot Noir, Sauvignon Blanc, Riesling, and Pinot Gris. By April 2005, a facility would be needed to process all the additional fruit coming on-line.

I met Philip Woollaston in 2003 when he and John Montero (his winemaking consultant), came to Oregon to see the latest in gravity-flow wineries. The Willamette Valley has not only gained a reputation for its Pinot Noir grapegrowing, but also for innovative wineries designed to process this delicate and fragile fruit. Montero and I had known each other for several years and had worked together previously on a California winery project.

Montero indicated that they were looking for ideas, and asked if I'd be will-



Aerial view illustrates how winery blends with surrounding landscape. Photo by John Cubley.



Cast-in-place, stainless steel-lined concrete fermentors (8.5-ton capacity). One support rail of punch-down device is visible. Loading bay for the 4.5 metric ton movable fermentors is in middle of floor. Custom stainless slot-drain runs the length of the fermentation room. Photo by Elspeth Collier.

ing to show them some of my firm's projects. Earlier that year, I had the opportunity to learn a little about the New Zealand .wine and construction industries, while touring wineries and discussing winemaking preferences with Martinborough Pinot Noir pioneer Larry McKenna and his architect, Charlie Nott.

Our first Oregon winery visit was to Alloro Vineyard in Sherwood, just outside of Portland. At 4,500 square feet including the owner's apartment, it's one of our smallest winery projects. It became immediately obvious that Woollaston has a keen eye for architectural details that most people would not notice. Later, I learned that his father, Toss Woollaston, was one of New Zealand's most celebrated artists.

In the course of the day's conversations, Woollaston revealed that he had literally dug himself into a "bit of a hole." When an excavation contractor needed fill for some other work at the vineyard, Woollaston suggested that

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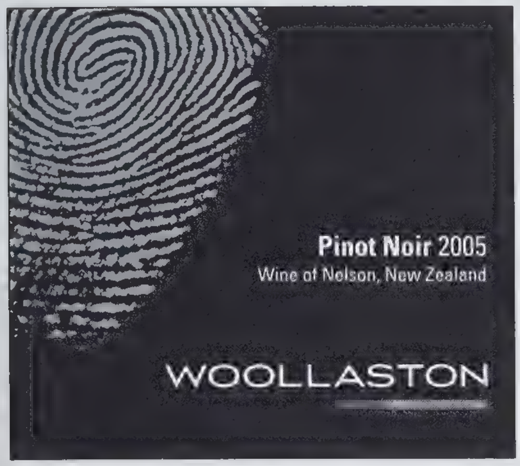
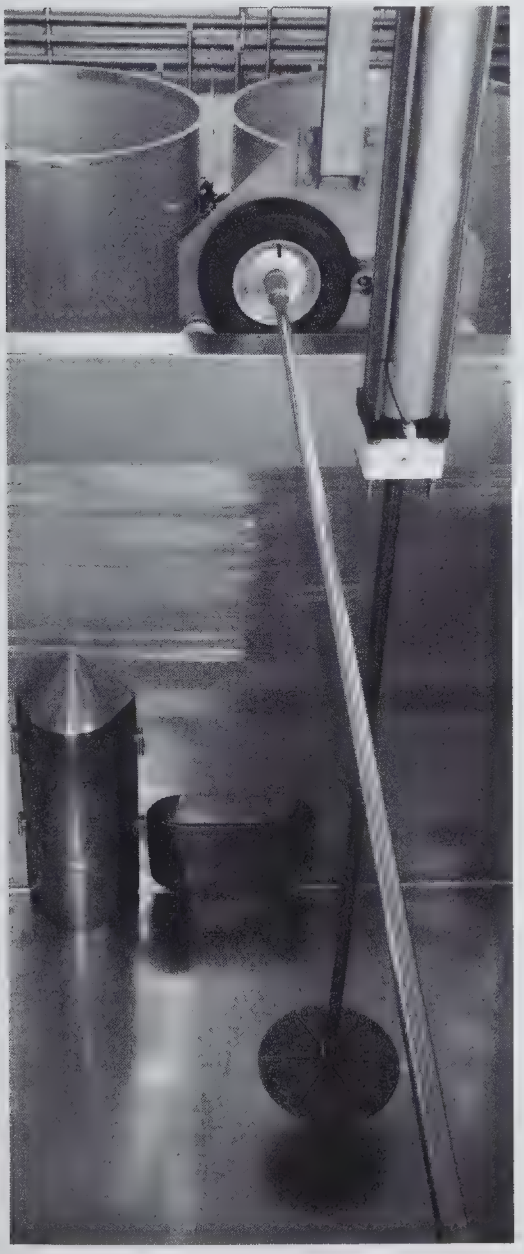


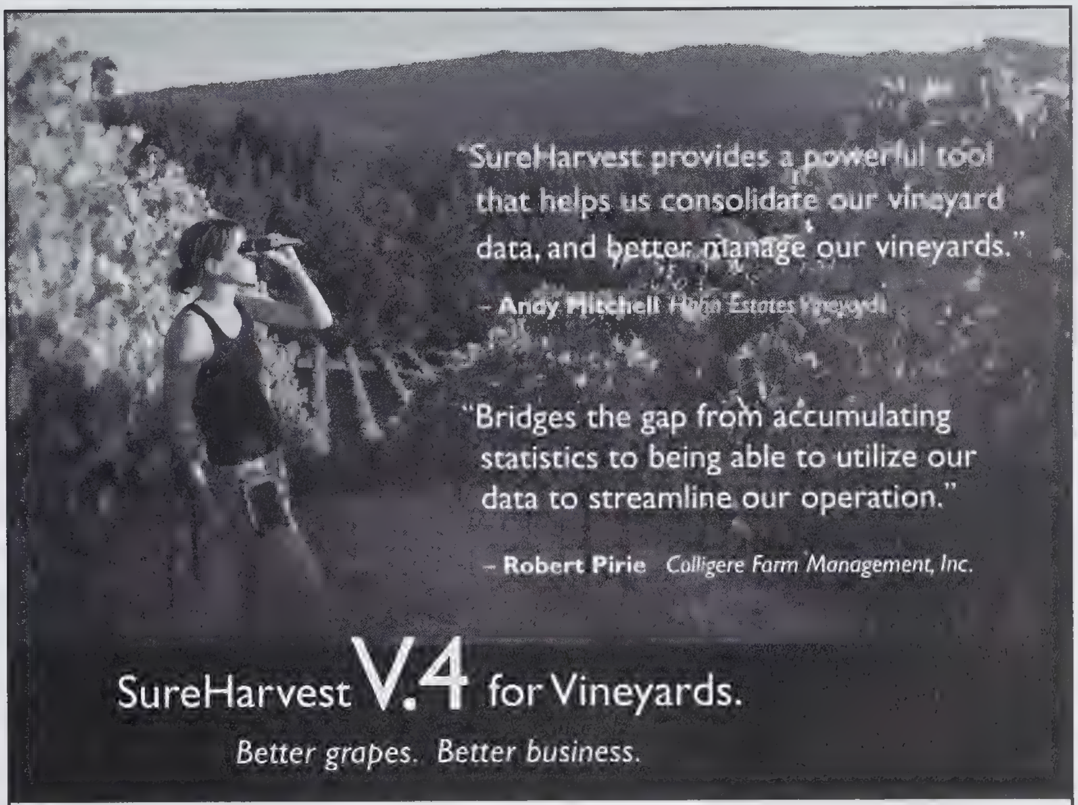
he take it from the site of his future wine cellar. It sounded as though the excavator might have gotten carried away.

A New Zealand architecture firm had been hired to work on an administration building, which was to include a tasting room, but they had no experience designing a winery. When we exchanged addresses, I thought that was the last I would likely see of him.

My home phone rang early the next morning, and I was pleasantly surprised to hear a Kiwi accent. He asked if I would be able to meet with him before his flight back home. After a brief meeting in my office, Woollaston asked if I'd be willing to come to New



Track-mounted punch-down device runs length of fermentor array. Photo by Elspeth Collier.



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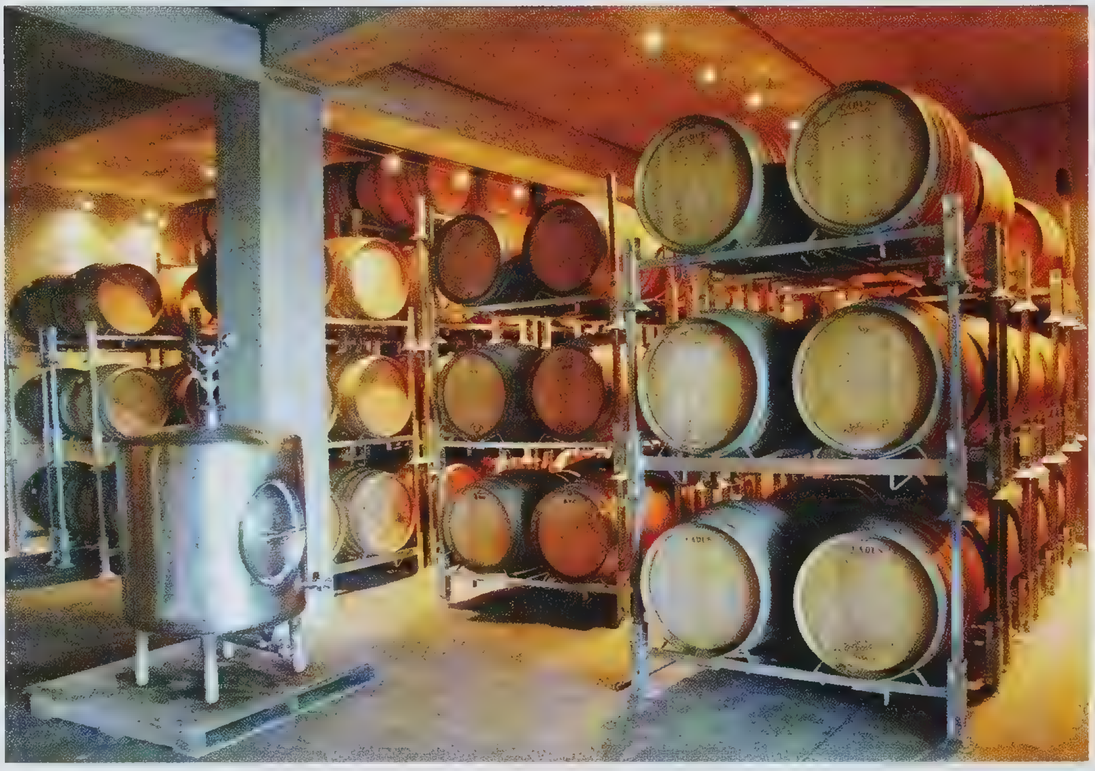

Working cellar with forkliftable barrel racks. Topping tank is brought in, as needed, on a pallet. Photo by Elspeth Collier.

Zealand the following week to work on his project. I agreed.

Prelude to design

Larry McKenna encouraged me to stop and see him on my way to Nelson. He took me on a whirlwind tour of North Island wineries. I learned a few important Kiwi winery terms such as "cellar door" (retail tasting room); "smoko room" (employee break room); "trade waste" (process waste); and some construction lingo including "tender" (bid); "nibbing" (curbs); and "programme" (schedule). Noting that many buildings had most of their windows and porches facing north, I realized that I was not in the northern hemisphere.

Upon arrival in Nelson, I met Woollaston and Montero to discuss Woollaston's goals for the project. Initial production was to be about 250 tons, allowing room for growth to 575 tons — equivalent to 17,500 to 40,000

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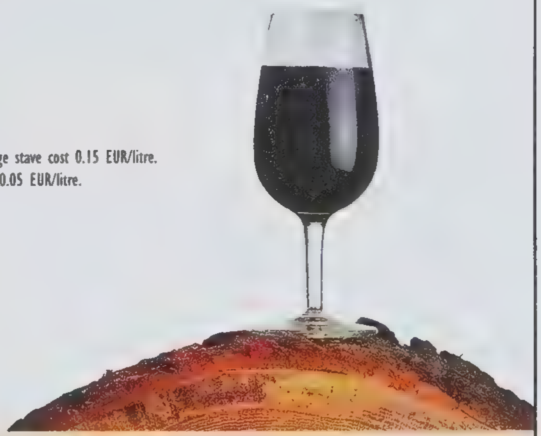

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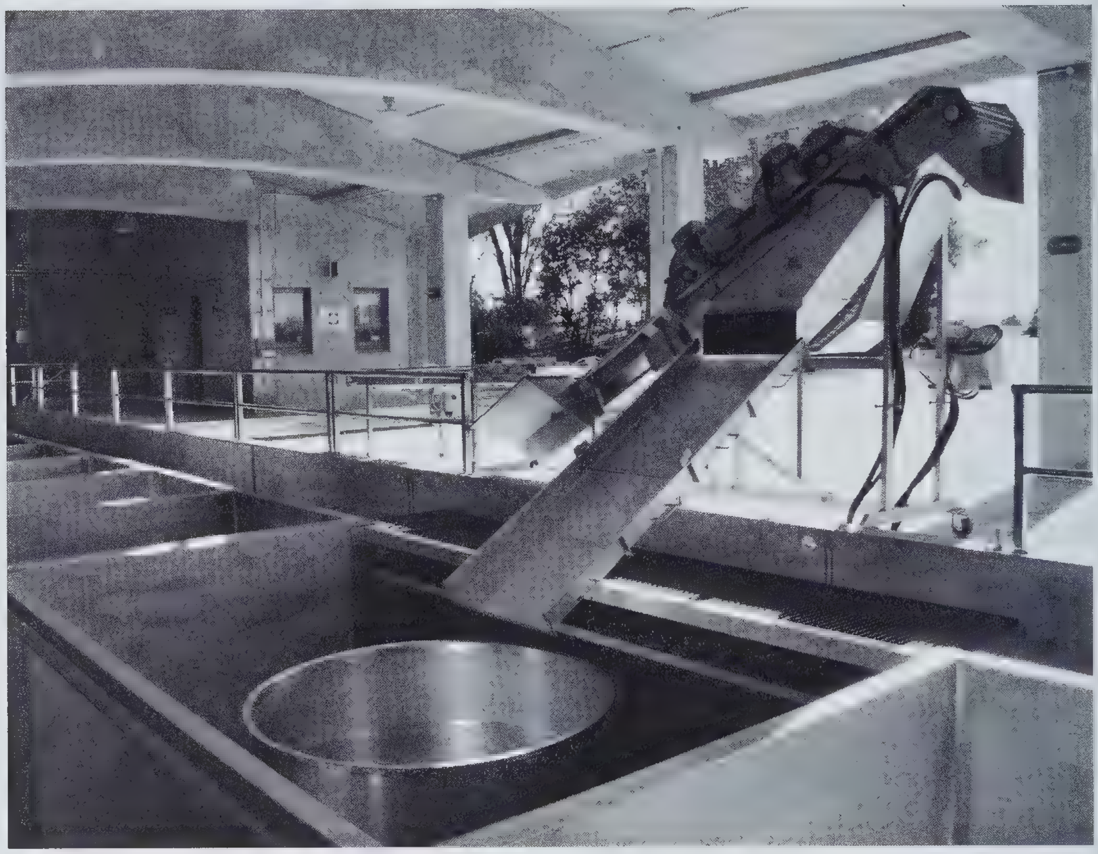


Loading bay for movable fermentors, which are filled directly from SOCMA (Euroselect) destemmer. Guardrails are removable. Winemaker's office (background) has clear view of crush pad. Photo by Elspeth Collier.

cases, with about 40% red wines and 60% whites.

Woollaston made it clear that he wanted to ensure the highest quality for each wine he anticipated producing. For him, Pinot Noir was the gold standard and it would be a large part of the mix. Design-wise, the highest common denominator would be gentle fruit handling, which implied full use of gravity.

Complicating the project was that Woollaston wanted part of the facility to double as a banquet and entertainment venue for up to 200 attendees and to allow plenty of space for the display of art. He had in mind a sculpture garden inside and out.

My first look at the site convinced me that, if anything, Philip had downplayed the size of the excavation. An entire 10 meters of the hillside had been cut away. Surprisingly, it had been standing that way for six months without too much sloughing. I wasn't too comfortable getting close to the edge. Apparently New Zealanders weren't as paranoid about lawsuits as Americans. Clearly we had to come up with a design quickly.

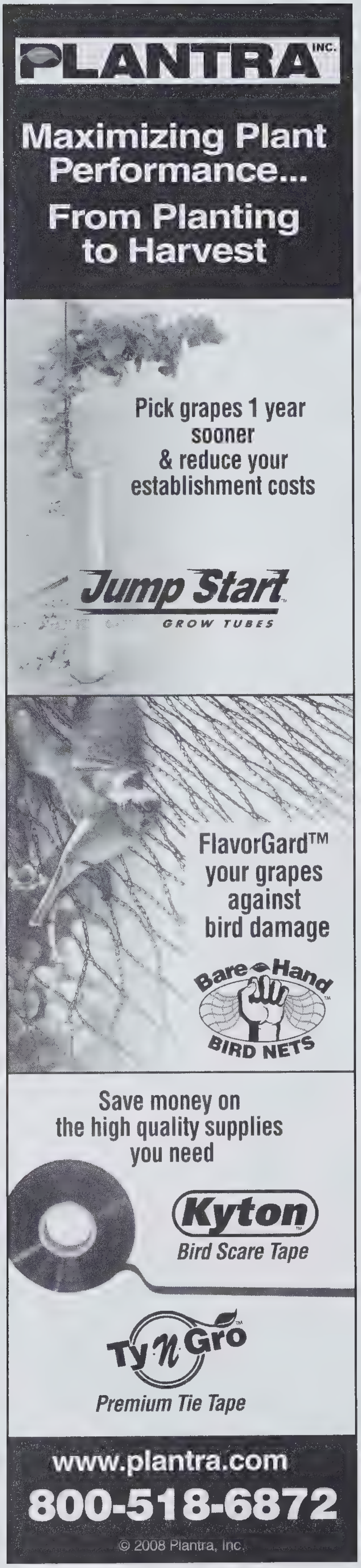
Concept takes shape

Working with a checklist I'd developed that covered each specific workspace in a winery, Montero and I devoted a couple of days to work out the required number and size of fermentors, positioning tanks, barrels, and to resolve the key issue of how the fruit would be most efficiently processed. We compared the merits of a fixed crush pad and movable fermentors to a portable sorting/destemming line.

A hybrid scheme was chosen with an array of fixed tanks to be loaded directly off the grape receiving level. Space would be reserved at the center for a loading bay for smaller, movable fermentors. These could be arrayed along the opposite wall with quick-connect fittings for the glycol system.

A rail-mounted pneumatic punch-down device would be installed over the large fermentors. The small tanks could either be punched down by hand or by moving them back to the loading bay.

At the west end, the double-loaded aisle would open up to form a press room large enough to accommodate two presses. Given that winery work



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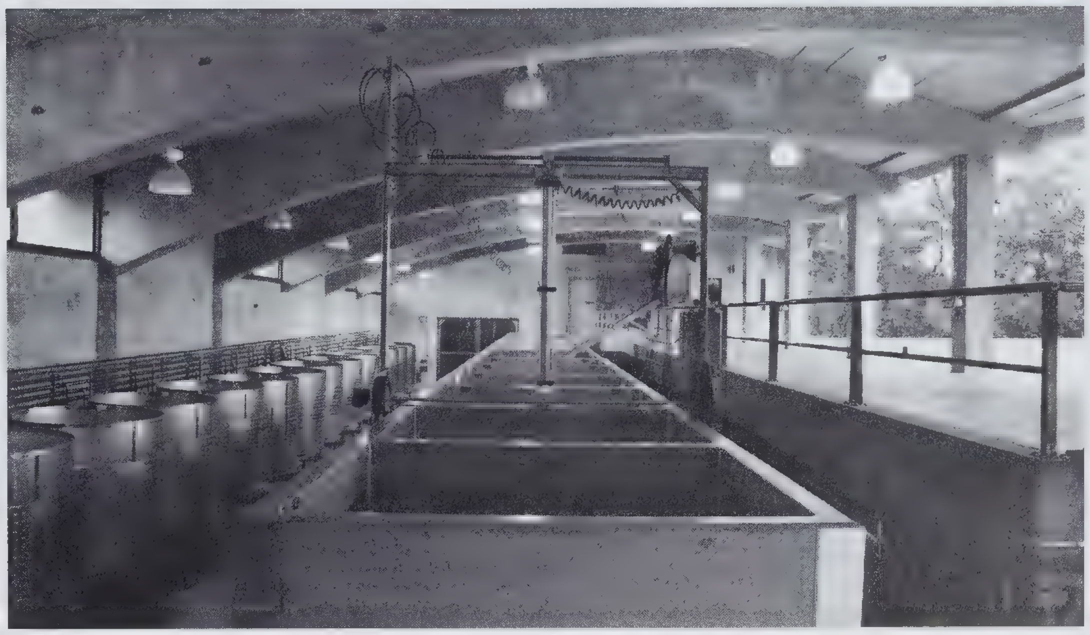
areas are often full of equipment and draped with hoses, Montero and I agreed on the importance of providing more than one route into and out of the main work spaces. Large doors were provided at both ends of the fermentation room.

After two days, an overall four-level winery concept took shape. Grape receiving would be at the top, opening directly onto the red fermentation room about 3 meters (10 feet) below. White fermentation and settling tanks would be on the next level down.

Rather than stair-step the building down the slope, because of the large existing cut we decided to go straight down four levels. Filling the void with functional space would be less expensive than placing the "engineered fill" — layer after layer of carefully compacted soil or gravel — required to support a structure.

The need to make use of all the previously-excavated volume allowed us the opportunity to have barrel cellars on both the settling and bottling levels. Two large flexible spaces, directly underneath the fermentation room and



Grape receiving and fermentation looking east from press room, with catwalk access provided along each side. Natural light from both north and south sides of building reduces glare. Photo by Elspeth Collier.

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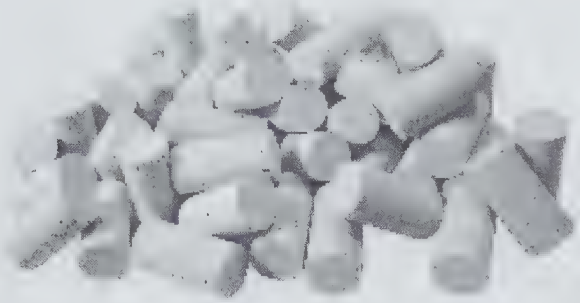

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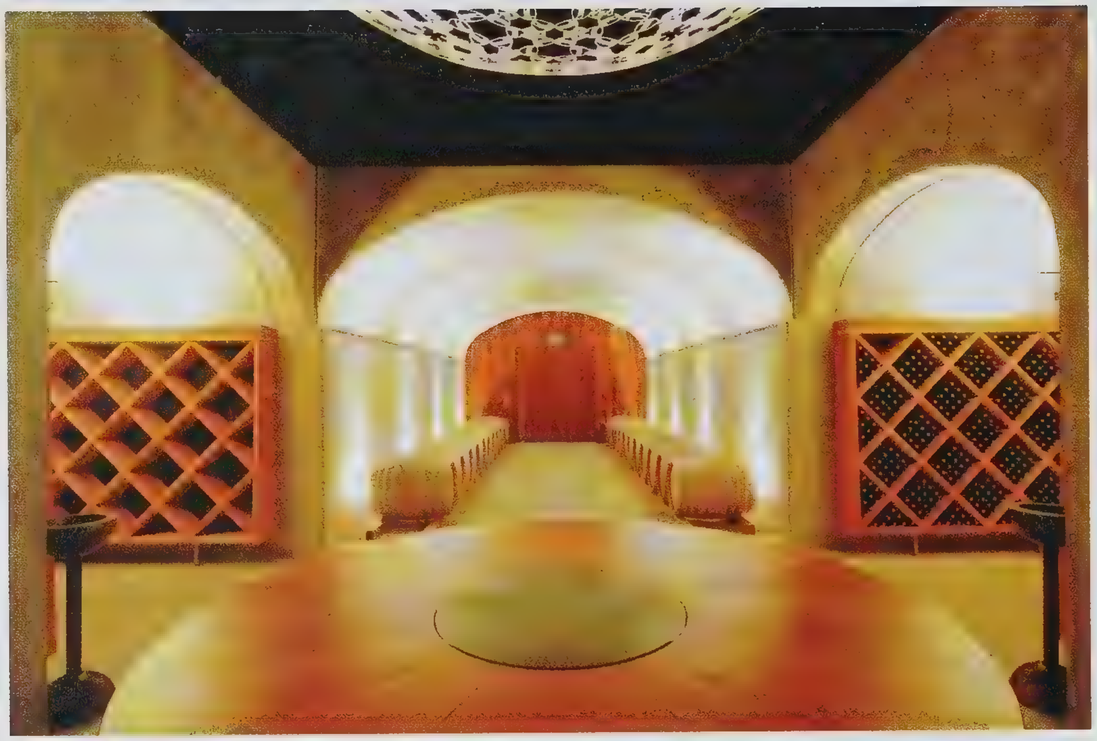

Ceiling of pre-cast concrete arches on cast-in-place walls forms central "show cellar" leading to tasting area. Arches on either side lead to wine library. Photo by Daniel Allen.

just off the settling room, could be used for either barrel storage or additional tank capacity.

Like a multi-level French "chai," this arrangement offered the option of two different, naturally sustained temperatures. Malolactic fermentation could occur in the upper cellar with longer term ageing on the lower level. The space under the press room would contain the mechanical room and workshop, with both exterior access and good noise containment.

The main barrel rooms, wine library, and show cellar would be tucked under the settling level. The show cellar would have hand-stacked barrels flanked on each side by larger "working" cellars with barrels on steel racks. Both cellars would open directly to the large multi-use work and entertainment space. In keeping with our goal of providing more than one access point, they would also connect to the library and show cellar.

Along the east wall of the banquet space would be a well-equipped commercial kitchen. Adjacent to the kitchen would be the bottling room, enclosing the east end of the terrace. Large double doors would provide direct access between bottling and the multi-use space, which could be used to stage glass for bottling.

Woollaston asked me to give a brief talk on winery design to local winemakers, to be hosted by Tim Finn at neighboring Neudorf Vineyards. As I sorted through the slides I'd brought along, Montero and I had a chance to discuss some of the good and bad details we'd seen around the world.

One photo was of an elegantly curved, stainless steel slot-drain in the round fermentation room at Craggy Range Winery (Hawkes Bay, New Zealand). When I took the photo, they had just had a public reception in the space and the drain was covered with several layers of duct tape to prevent it from becoming a death trap for high heels.

We discussed how critical it was that spaces be adaptable for multiple uses. I made a mental note that the trench drain running down the center of the ballroom/barrel-washing area would require a custom cover to prevent injury.

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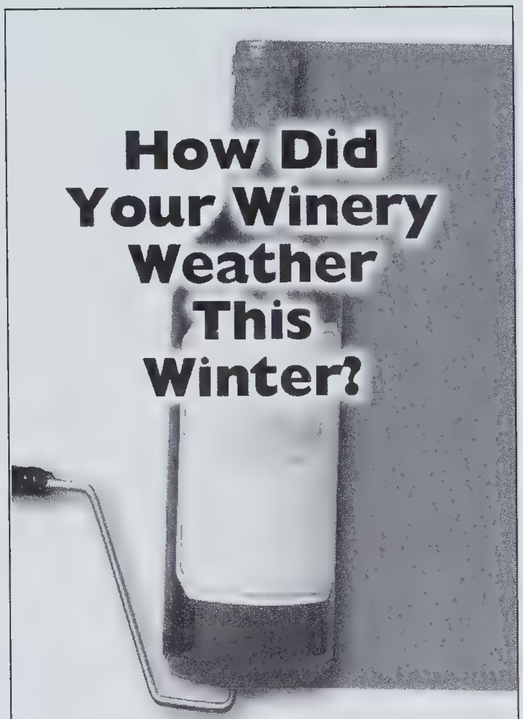

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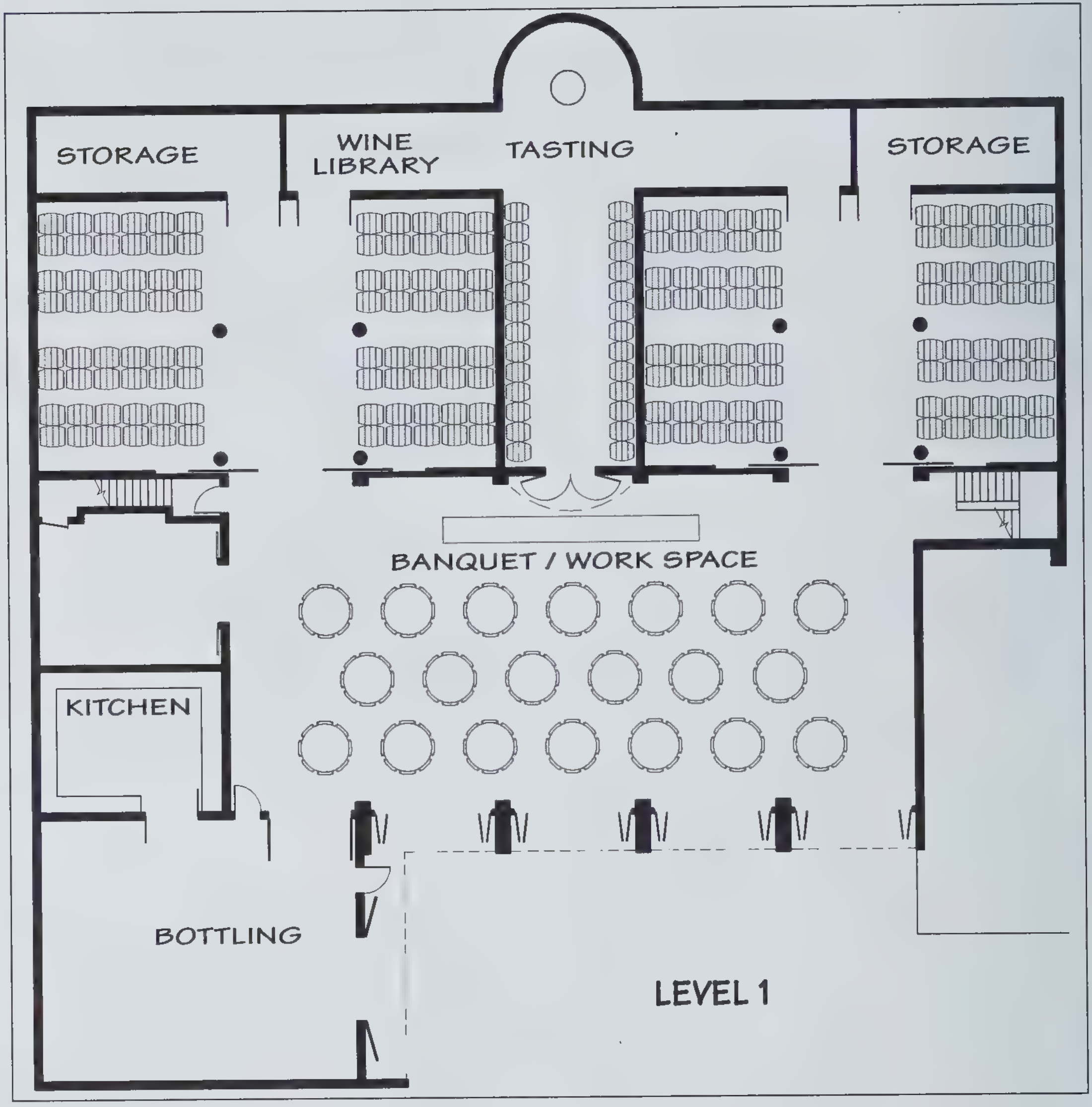
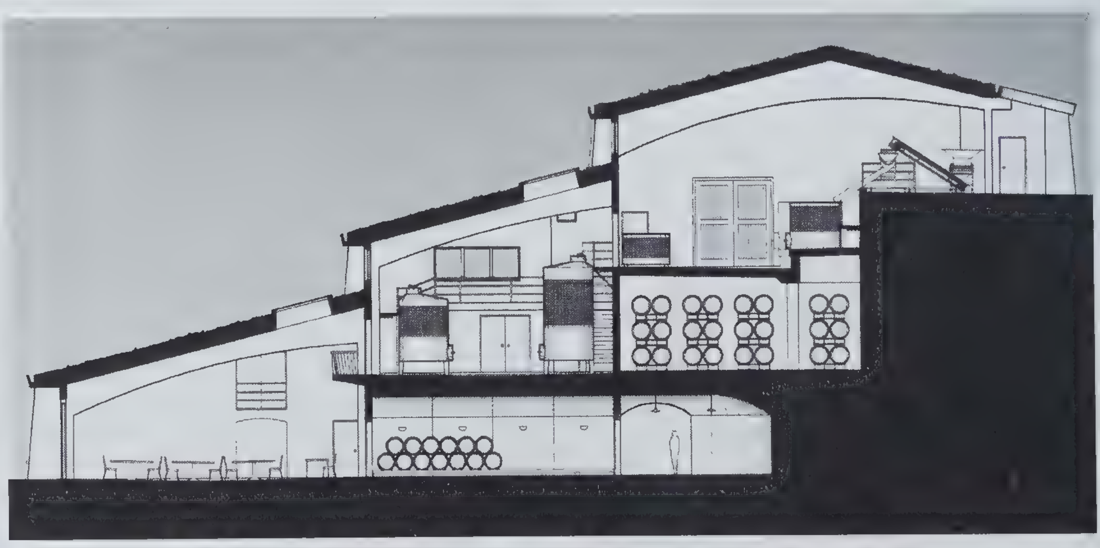


Going "digital"

With a basic concept in mind and armed with hand sketches, we went to Brian Riley of Arthouse Architecture Ltd, for an intensive design workshop (what architects call a "charette"). Montero and I spent three days in Riley's office huddled over sketch paper and computer screens.

One of the main challenges was how to site such a large production winery and entertainment venue without having a major impact on its idyllic rural setting. We also wanted to be



Cross-section (from top): Grape receiving; fermentation; first-year barrel room, settling with balcony overlooking multi-use space; show cellar/wine library. Skylights and continuous clerestory windows provide natural light.

Tank transporter was assembled from parts of old forklifts.

respectful of a small grade school directly across the road.

Early on we determined the easiest way to minimize the building's impact was to completely cover the roof with vegetation. This fitted well with Woollaston's original desire for as much of the complex as possible to be underground. A huge central skylight would keep things from feeling too subterranean. Enclosing the exterior terrace with an earthen berm would shield the winery both visually and acoustically from the school.

Refining the details

By the end of one intense week we had developed an approach to successfully marry our concept to the site. I returned to Oregon with the schematic design, an entire week's work, on a single computer disk. The plans were refined and many details worked out over several weeks.

There were minor challenges along the way. The local architects used a different computer platform and software, so it took a while to get inter-office communications working smoothly. Early in my career, I worked one year in France and, at the time, was quite comfortable with the metric system but several years had passed and I was rusty. One would think the CAD software would make it easy, but again it took a while to work out the bugs.

New Zealanders, I soon discovered, are very resourceful and take pride in their do-it-yourself culture. While most of the standard American and European winemaking equipment such as barrel racks and forklifts had local equivalents, they all had slightly different dimensions. As a result, everything had to be verified to ensure that we weren't missing a critical dimension by a few centimeters.

Since the decision was made to keep the grape receiving area open, we had to be careful not to provide perches for the plentiful local birds. It was decided to make use of solid pre-cast concrete beams to support the roof. Their smooth sides would prove inhospitable to feathered pests, but their weight added to the size of the required foundations. To add some interest to the long grape receiving façade, a subtle arc was carved into the overhanging fascia.

Grand opening ceremonies in multi-use space.

Because of the occasional "musical chairs" among winemakers and the continual evolution in winemaking equipment and techniques, we constantly strive to make our designs as flexible as possible. This is especially important when working with a consultant during the design process because the full-time winemaker is not yet on board.

Fortunately, winemaker Andrew Sutherland joined the team full-time just as the schematic design was nearing completion and, as a result, was able to select the specific equipment and customize the facility as much as possible to his winemaking style.

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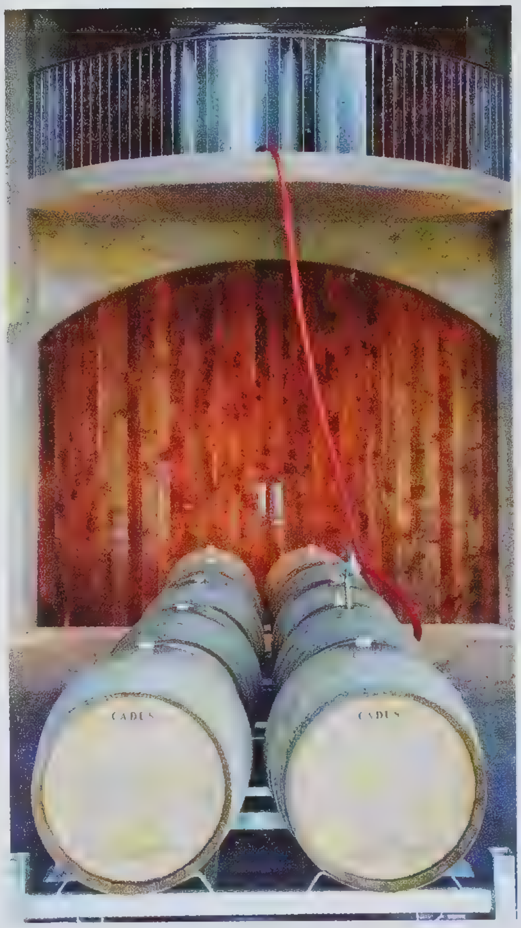
Ironically, with regard to flexibility, one of the changes was the use of square stainless steel fermentors supported by pre-cast concrete walls. Reminiscent of concrete fermentors often seen in older Burgundian wineries but rare in modern facilities, they have the advantage of increased thermal mass but with the added temperature control offered by dimpled jackets. While they were the idea of Woollaston and Sutherland, by coincidence, Montero had direct experience working with some at Bouchaine Vineyards (Napa, CA). They are all pleased with the results.

The fermentation room ended up with one row of 8.5-ton stainless-steel-lined concrete fermentors along one wall and smaller 4.5-ton mobile, stainless steel fermentors opposite. All tanks are temperature-controlled and were made in New Zealand by IDE of Nelson, Truform of Blenheim, or Crown of Invercargill.

A custom-made pallet jack assembled with parts of old forklifts and featuring an air cushion (also by IDE) lifts small tanks to be easily wheeled into the loading bay and back to their glycol-support stations.

Sutherland preferred to have a private office, separated from the lab, so the "smoko room" was converted to his office, with the added benefit that it overlooked the crush pad.



Central balcony on settling level overlooks main workspace/banquet hall and allows gravity filling of barrels. Skylight provides plenty of daylight. Photo by Elspeth Collier.

The lab is centrally located at the catwalk level of the settling tanks — one flight down to the settling room floor and one flight up to fermentation. It is located along the south wall to provide a pleasant view and plenty of natural light. The room's square proportion easily accommodates a large, central technical tasting table.

The show cellar and wine libraries have a cruciform plan, wrapping around the working cellars. At the far end of the show cellar, an apse-shaped (¼ sphere) tasting area was planned, with wine libraries off of each side. These linear display spaces were also to serve as secondary fire exits.

The apse concept didn't survive "value engineering." Instead the cellar tasting room was cast as a simple box with a semi-circular rear wall. The ceiling is finished in black and provides a backdrop for a specially commissioned hanging sculpture by Neil Dawson, dramatically lit with concealed spotlights.

Fitting in with the neighborhood

Nelson's temperate maritime climate makes alfresco dining impractical most of the year. However, large floor-to-ceiling accordion doors allow the option of spilling out onto the terrace in summer. The terrace, which is enclosed by

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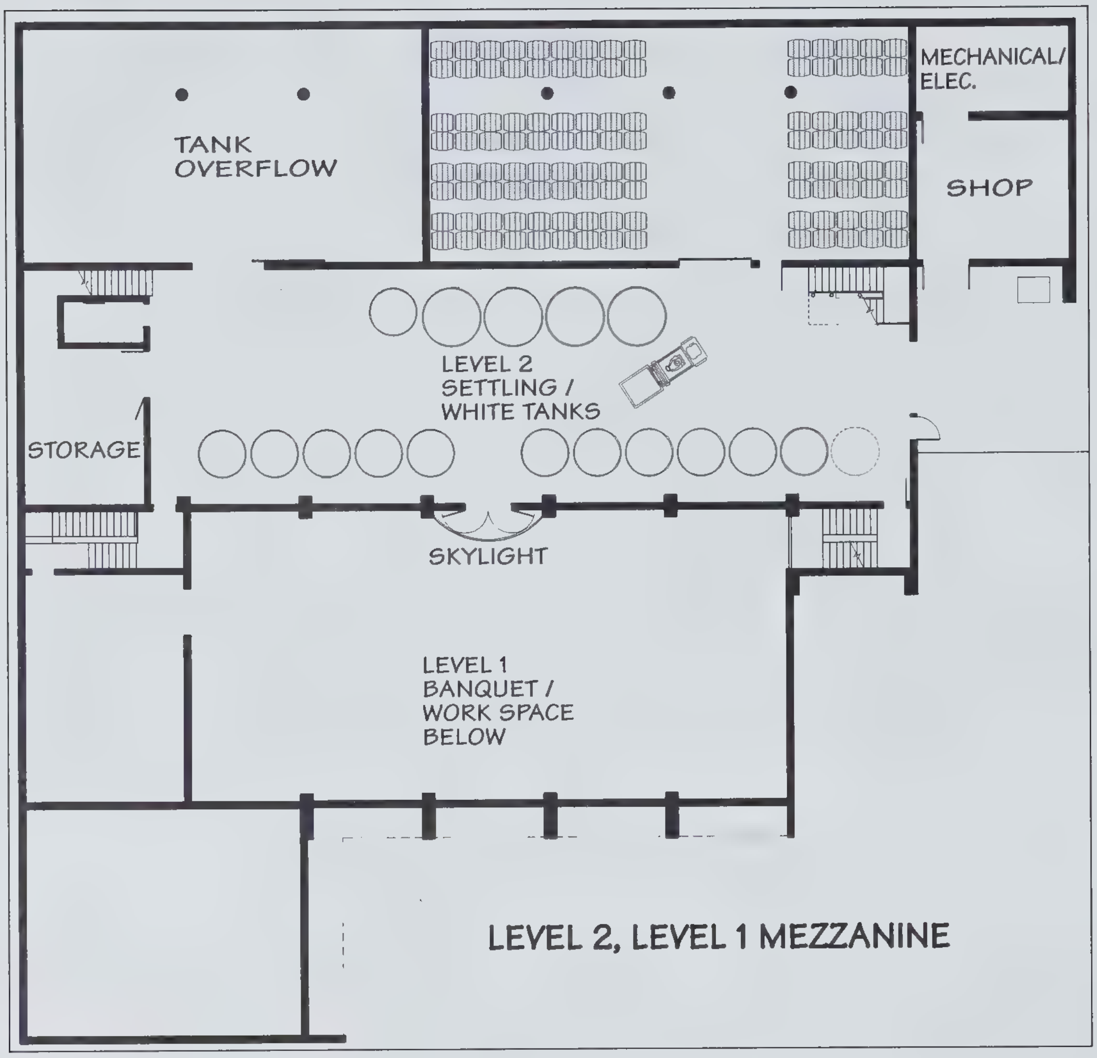
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densely planted berms, doubles as a loading space for barrels and bottling supplies.

Although my firm was not directly involved in the construction phase, there were some unique challenges. Half-way through the project, the local source for Portland cement ran out. The contractor was able to bring in a batch from Indonesia but the color was not a close match. Woollaston reports it has been a popular subject of conversation but the color has started to fade with age.

The production portion was completed and the first grapes processed in March 2005. It took more than one year for the roof planting to grow to a lush vegetative carpet. Native plants, primarily silver tussock grass, were initially provided with drip irrigation but now are able to survive on their own.

Looking to the future, a case goods building is planned. One option being considered would see it cut into the slope where the terrace berm is currently located. It would also have a landscaped roof.

Completion/Recognition

It was a great experience working with a talented international team of winemaking and construction professionals. The project received a regional Design Award from the New Zealand Institute of Architects. The jury noted:

"The client's brief for a gravity-fed winery has led to a robust building stepping down the Mahana hillside. Tussock-planted roofs reduce the visual scale and impact. Use of raw concrete and timber create unique interior spaces which remain

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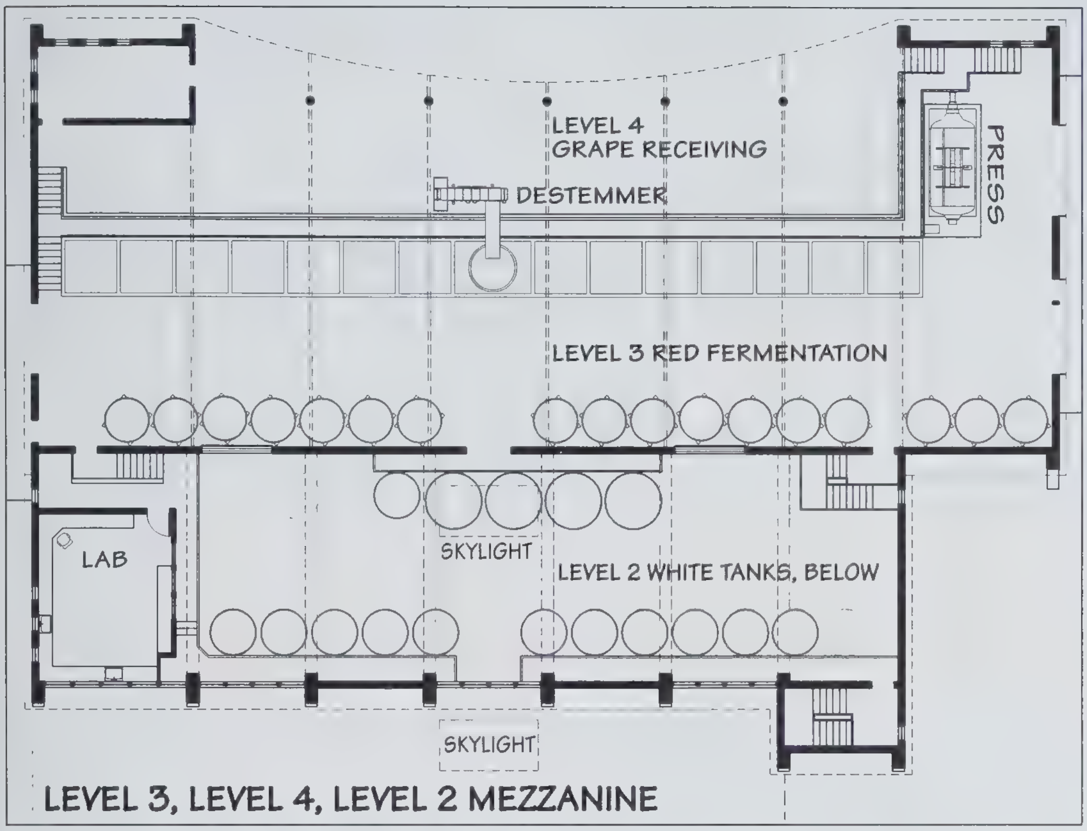

natural and honest, contrasting with the stainless steel winemaking tanks. Careful consideration was given to the penetration of natural light, deep into these spaces. The integration of artwork into the lower function area creates a spectacular backdrop for the celebration of wine."

The building was also honored with both the 2007 Gold Award and as the recipient of the Commercial Project of the Year award from the Registered Master Builders Federation of New Zealand. The New Zealand Concrete Society awarded it the Monte Craven Architectural Building Award for a building which is an outstanding demonstration of functional suitability, aesthetic appeal, and environmental sensitivity. ■

Larry Ferar is the principal architect and landscape architect with Laurence Ferar and Associates, Inc., a Portland, OR firm established in 1983 specializing in winery design. www.ferar.net Tel: 503/ 241-5447.

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JOSEPH PHELPS VINEYARDS

New fermentors for gentle handling

BY Tina Vierra

Eight new red wine fermentation tanks, manufactured by Santa Rosa Stainless Steel (Santa Rosa, CA) were installed for the 2007 harvest at Joseph Phelps Vineyards (St. Helena, CA). The new tanks are outfitted for the gentlest possible handling of red wine during fermentation. Delestage is one part of the primary fermentation process.

Ashley Hepworth, associate winemaker at Joseph Phelps, learned about delestage during a 10-week working sabbatical in 2005, observing and participating in winemaking in Bordeaux. She was based at Chateau Angelus in St. Emilion, working with Merlot, Cabernet Sauvignon, and Cabernet Franc, and she visited several other Bordeaux producers.

"At Cos d'Estournel, I was impressed by the use of delestage, and the results they are achieving," she says. "In their tank room, they have much more dramatically 'pitched,' truncated tanks than I have ever seen."

Delestage involves removing all juice from the skins in the fermentor to another tank, then pumping the juice back over the cap. "The idea is to perform delestage during active primary fermentation and to break up the cap," notes Hepworth.

Dr. Bruce Zoecklein (Virginia Tech) reported in his Enology Notes, "Our delestage research from the 2000 season suggests that this procedure reduced the tannin concentration by 35%, reduced the monomeric anthocyanins by 15%, and increased the polymeric pigments by 59%, compared to conventional fermentation lots. The significant difference in the large polymeric pigment (LPP) concentration, coupled with the reduction of seed tannins, helps to explain the sensory differences between delestage-produced and conventional punch-down fermentations.

"Delestage-produced wines are more fruit-forward and have a richer yet supple and integrated tannin structure. Due to the higher percentage of LPP, it is assumed that the color stability of the delestage wines will be greater as the wines age." (Enology Notes #23, July 2001, www.fst.vt.edu/extension/enology/EN/23.html)

Four straight-side, double-wall tanks and four truncated tanks (10-ton capacity with completely insulated side walls, bottom, and top) were installed. Each tank has three glycol jackets — a 42-inch high upper "cooling" jacket, a 23-inch high lower "warming" jacket, and a 29 sq. ft. "warming" floor jacket.

The truncated tank measures 7.5 feet diameter at the top, and 8.5 feet diameter at the bottom. The advantage of the truncated tank shape, Hepworth notes, is that the cap breaks better with the wider surface area at the tank-bottom.

Each tank has a 12-inch diameter screen tube running the full height of the tank to a bottom valve, used to collect juice for pump-over without skins or seeds, and is also ideal for delestage.

There is a Waukesha model-2065, 3hp centrifugal pump for each tank. This small, gentle pump connects to a piping system with smaller than typical dimensions, intended for slower and more gentle flow of the juice during pump-over. Piping is a 2-inch diameter line from the bottom valve into the pump and a 1.5-inch diameter return line to the irrigator for pump-over, operating at 60 gallons per minute. Other red wine fermentors at Joseph Phelps have 2-inch lines for pump-over by a Waukesha-2085, 7.5hp centrifugal pump with flow rates of up to 110 gals/minute.

One of four new truncated tanks is placed by crane onto the tank pad. Photo by Fred Lyon.

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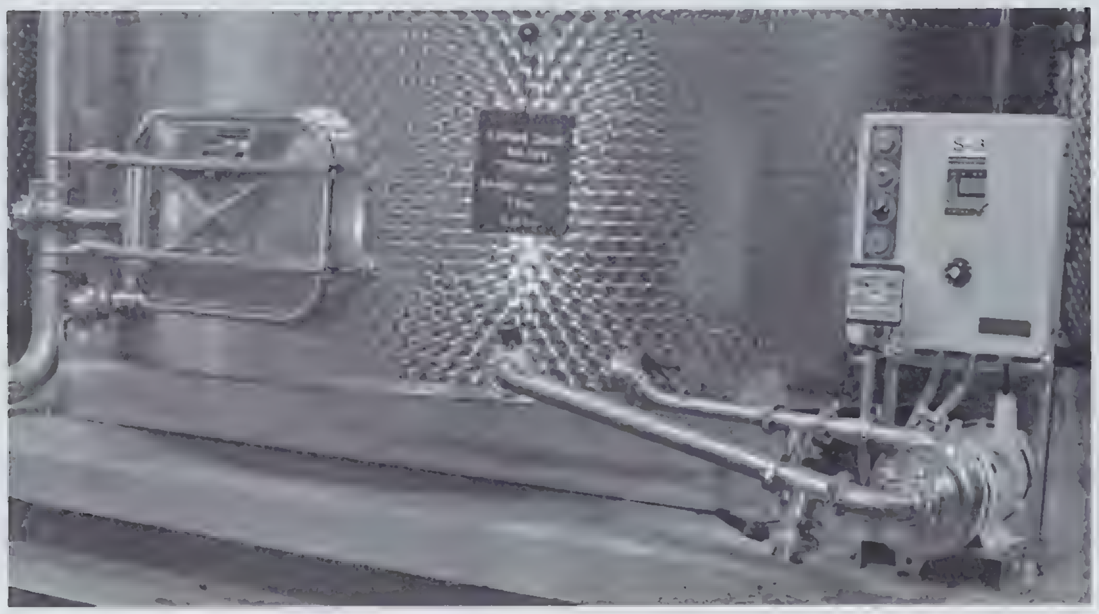

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12-inch diameter screen tube inside tank collects wine with no seeds or skins for pump-over. (Photo by Fred Lyon)

In 2007, the tanks were filled only once as the winery is testing the design and functionality of the new tanks. In 2008, they hope to complete two fermentations per tank.

Cabernet Sauvignon grapes were sourced from three estate vineyards in Yountville, Rutherford, and west of Soscol Avenue (north of Napa). Grapes from each property were divided into straight tanks (for control), truncated tanks, and older conventional fermentors. The first harvest to go into the new fermentors came from the Yountville Vineyard at approximately 25° Brix.

Grapes were sorted and went through a Delta-E2 destemmer (18mm hole diameter cage) with an electronic variable speed control. About three

Ashley Hepworth holds 36-inch irrigator used in pumpovers.

tons per hour of grapes were handled very slowly. "The rollers on the destemmer were set as wide as possible to pop berries, but not smash them," reports Damian Parker, vice president of production. A Waukesha-220, 4-inch positive displacement pump transferred the must to the fermentor.

At Joseph Phelps, the juice is left on the skins for about 20 to 30 days total skin contact. Winemakers typically do a four-day cold soak, then inoculate. Pump-overs are one to four times per day depending on the stage of fermentation.

Between 18° and 12° Brix, one complete delestage is done.

Joseph Phelps Vineyards usually macerates to or past dryness, though Hepworth says, "The decision on when to press off the skins is made by taste. In Bordeaux, my observation was that enologists perform more extended maceration than California winemakers tend to do."

The winemakers at Joseph Phelps eagerly await the results of their new fermentation system. Gentle handling and delestage should ensure a high-quality wine with enhanced color and soft tannins. ■

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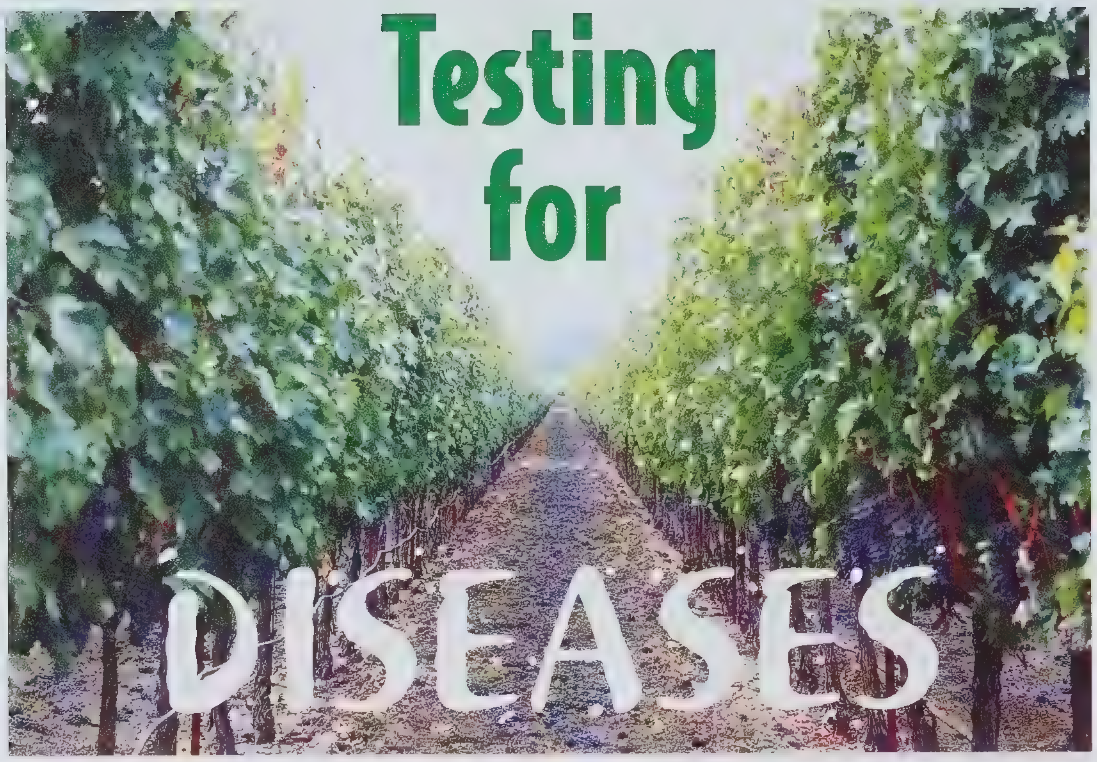
Testing for DISEASES in the vineyard



Early disease detection helps growers plant healthy vines and avoid spread of disease to new vineyards.

BY Judit Monis, Ph.D.
STA Laboratories, Gilroy, CA

Grapevine disease testing has become common today because of the rapid increase in vineyard investment costs, and greater disease awareness caused by the Phylloxera outbreak of the 1980s and subsequent outbreaks caused by other disease agents (and due to the development of technology and rapid assays).

But growers can become overwhelmed with the many confusing issues related to testing. Should one test prior to planting, in the vineyard after establishment, or both? What should be tested and when?

Once testing is done, interpretation of the results is equally important, in order to make the best vineyard management decisions. Growers are interested in testing grapevines to determine the presence of pathogens (or disease-causing agents) that could impact vineyard establishment, grape quality for wine production, production costs, and ultimately cause decline and death in the vineyard.

The documented spread of certain virus species causing leafroll disease in Australia,[5] Argentina,[2] Europe,[1] South Africa,[6] and more recently in California,[3] is a clear example of the importance of knowing not just that the vineyard is infected, but which disease causal agent(s) are present.

In spite of the length of time elapsed, studies are in progress to determine the efficacy of treating virus-infected vineyard blocks with systemic insecticide and vine removal (either mechanically or after Glyphosate treatment) on controling the spread of Grapevine leafroll associated virus-3 in South Africa. A summary of the suggested strategies for control of the disease spread and progress on the research is described by G. Pieterson.[8]

It is also important to pinpoint problems in a vineyard prior to replanting. Certain pathogens can survive in the soil or residual grapevine roots for long periods of time and may re-infect (serve as inoculum) the newly planted vineyard. Knowing exactly what is causing the problem in the vineyard and taking preventative measures will help prevent (minimize) re-establishment of disease-causing agents.

The common reasons for testing grapevines, interpretation of laboratory results, reliability issues in testing, and testing strategies are reviewed below. The goal of this article is to provide readers with information to help with decision-making about planting materials, vine removal or replacement, and top-working to create and maintain a healthy vineyard.

Why test grapevines?

Vineyard professionals test grapevines for varying reasons: 1) planting and propagation decisions, 2) Top-working decisions, 3) vineyard-purchase decisions, and 4) determining the health status of favorite clones prior to disease elimination or propagation.

In general, laboratory tests are performed to determine the health or disease status of grapevines. For example, many growers have their vines tested to know what is causing problems in the vineyard — such as delayed bud break, decline, uneven berry ripening, or low production.

There are specific situations in which testing is recommended. First, testing is recommended when planting decisions are being made. Both nurseries and growers should submit samples from "mother" vines for testing for the presence of harmful pathogens. Depending on the outcome of the results, the vines will be planted or rejected.

Second, vineyards are frequently top-worked to change a grape variety, warranted by market conditions. Knowing the disease-status of the old scion and the new scion provides information regarding the potential for success of a given combination with the rootstock.

Third, growers should test their favorite clones to determine their health status prior to using disease-elimination treatments. Finally. samples from vines are frequently tested to ascertain future yield potential and vineyard longevity as a condition of purchase when a vineyard is being sold.

Testing strategy

It is important to take the most representative samples to allow the laboratory to detect the presence of viral pathogens. Whatever the reason for testing, one should have a well thought-out scientific sampling methodology or strategy prior to testing in order to benefit from the process. In most instances, a limited percentage of the vines will be sampled.

Testing both rootstock and scion plant material is imperative. Many growers submit bench-grafts (vines grafted at the nursery and grown in the field for one or two years) to laboratories for testing. Samples from both the scion (clone) and from the rootstock should be tested for optimal pathogen detection.

This is especially important when testing for the presence of viruses associated with leafroll and rugose wood diseases. These viruses move slowly in the vine and might have not had enough time to move (or accumulate) from the infected scion or rootstock and might not be detected by available testing methods.

Even with this practice, the presence of certain viruses can be difficult to detect in bench-grafts. Ideally, the rootstock and scion plant material would be tested *prior* to grafting. This allows the laboratory to sample from mature sections of a vine, which improves the detection of many viruses found in low concentrations.

An even better practice would be to test the mother vines from which the cuttings are collected. Ideally, the rootstock or scion mother vines would be visually evaluated during the growing season. This visual analysis will help bias sample collection towards any suspect vines or categories of suspect vines. The exact location of the vines to be sampled would be recorded and the samples that represent the various categories of symptoms would be collected and analyzed during the correct season.

When top-working an established vineyard the reason for testing both existing and incoming material is obvious: it would be unfortunate if, with all the effort put into the process, one would re-infect "clean" budwood material by attaching it to an infected rootstock or vice-versa.

Most often, top-work activity is done without prior knowledge of disease status in an established vineyard or in the new scion-grafting material. It is an unnecessary gamble to top-work an existing vineyard without proper testing.

Growers are advised to test both the original vine (the portion remaining in the field) and the new budwood source. Just as important as following the above suggested sampling strategy is to track vine sources to their original mother vines at the nursery or in the vineyard. This will allow the grower or nursery personnel to trace back sources in the event of a calamity.

Many scion-rootstock combinations may not develop symptoms immediately. Symptoms may develop one or two years after top-working. In some instances, the presence of pathogens in the original vine combined with a second pathogen in the new scion may produce severe disease symptoms after grafting.

Regular visual inspections and sampling of grapevines should be

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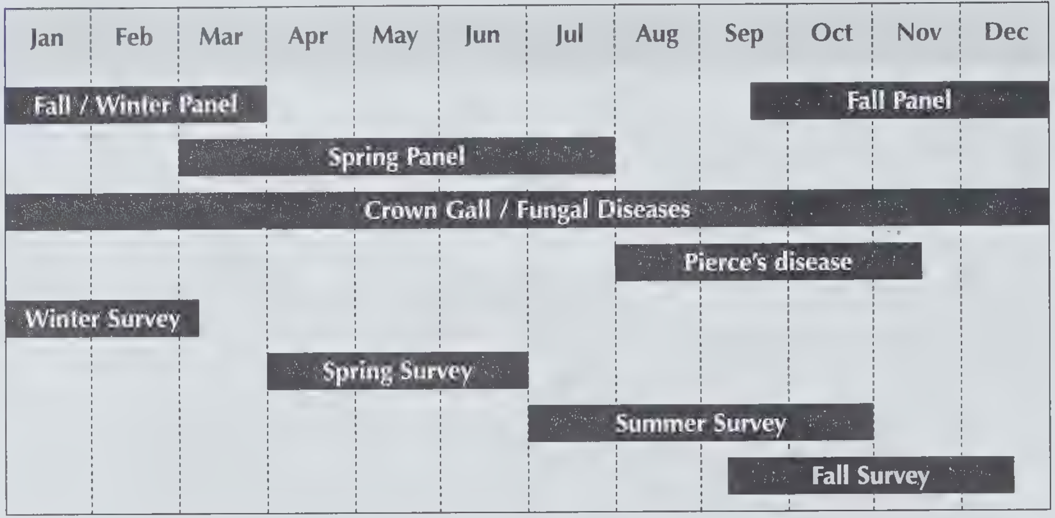
Figure I: Schedule for grapevine testing and vineyard surveys



Fall panel includes viruses associated with grapevine leafroll (Grapevine leafroll-associated 1–7, and 9, rugose (Grapevine Rupestris stem pitting, Grapevine Virus A, B, and D), and fleck (Grapevine fleck virus) diseases. Spring panel includes nematode-transmitted decline causing viruses (Grapevine fanleaf, Arabis mosaic, Tobacco and Tomato ringspot viruses).

done to monitor the disease status of a vineyard. Statistical methodologies for sampling grapevines should be developed. The sample number and type of tissues (leaves, canes, etc.) will be dependent on the test methodology and the pathogen(s) to be detected.

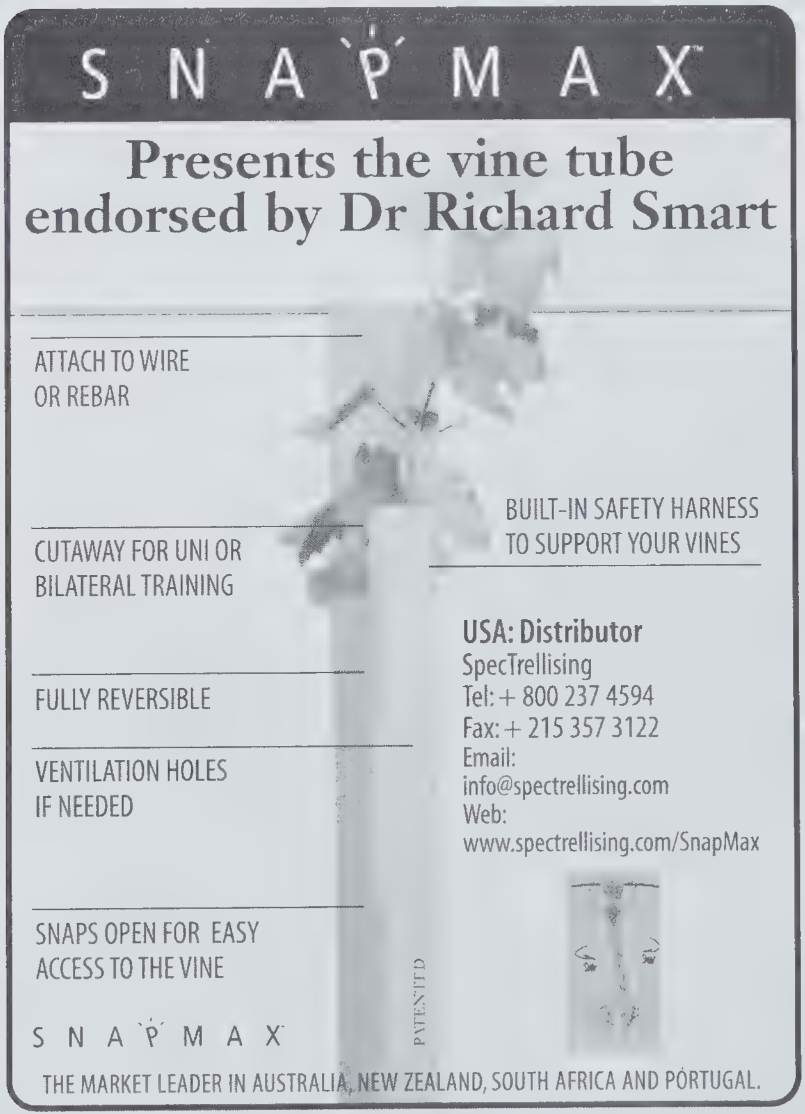
Sampling requirements

Test sensitivity and test accuracy are enhanced if correct sampling methodologies are followed. The sensitivity of the detection of pathogens depends on the methods used for diagnostics but are also influenced by the season and part of the vine from which samples are collected.

The knowledge of pathogen location (parts of the plant where specific pathogens are located) will improve the chances of detection. Consequently, sampling guidelines will vary, depending on the pathogen to be detected. See guidelines for seasonal sampling for the detection of grapevine major pathogens in Figure I and text below.

Sampling for fungal pathogens inciting canker, vine decline, or root disorders may occur throughout the year. Cane, trunk, cordon, and root portions with distinct symptoms should be collected and submitted to a laboratory.

When bacterial pathogens such as *Agrobacterium vitis* are of concern, the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crown or aerial portions of the vine should be collected throughout the year.

When testing for *Xylella fastidiosa*, the Pierce's disease causal agent, samples must be taken from stem and leaf petioles located in the basal portion of the vine in late summer to late fall.

To detect grapevine fanleaf virus and other nematode-transmitted viruses, samples should be collected from shoot tips early in the growing season. For other viruses such as leafroll, and rugose wood pathogens, samples should be collected from the trunk, cordon, or canes from early fall throughout dormancy. Combining samples from two or more vines into one test sample is not recommended as the sensitivity of detection may be compromised and give misleading results.

Individual samples (free of soil and insect contaminants) should be placed in clearly labeled zip-lock plastic bags containing a dry paper towel to absorb any extra moisture and submitted to the lab by overnight delivery.

Case Study — Importance of proper sampling — Virus Distribution

Many grapevine professionals have asked why testing results are so different when similar samples are submitted to different laboratories. This is not surprising. Testing methodologies can vary from laboratory to laboratory. Virus distribution has been reported to vary within the same vine.

J. Monis and R.K. Bestwick have shown that leafroll-associated viruses are not evenly distributed in grapevines.[7] Furthermore, the study showed that the position in the vine where the samples were collected and analyzed is critical. This study used the ELISA (enzyme-linked immunoassay).

Although, the use of RT-PCR (reverse transcription polymerase chain reaction) has greatly improved the sensitivity of virus detection, the most reliable results are obtained when samples are collected correctly and in the right time of the year.

In summary, grapevine viruses may be detected reliably in leaves, canes, cordon, and trunk tissues. However, the concentration of different viruses varies widely in different portions of the vine depending on the virus family or taxonomic group.

Figure II shows the distribution of Grapevine Leafroll associated virus-1 in a dormant, three-meter long cane. Tissues from various points along the cane were collected and tested. The light areas represent samples with a high concentration of virus. The dark areas in the figure represent parts of the vine with no virus detection. In the intermediate colored areas, the virus was detected in low concentration.

Figure II helps explain variation in test results in the same laboratory and between different laboratories. Therefore, multiple samples should be sub-

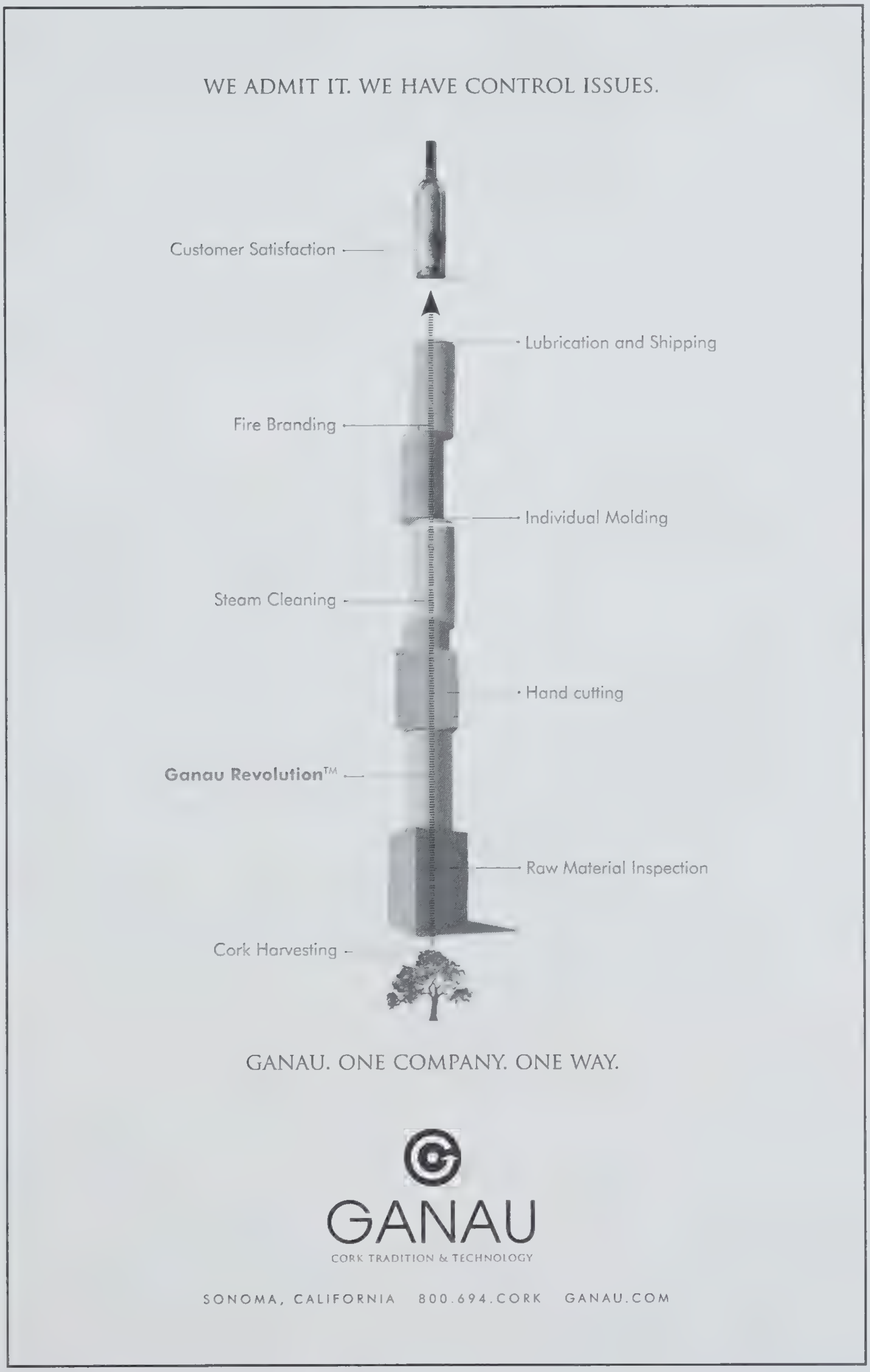
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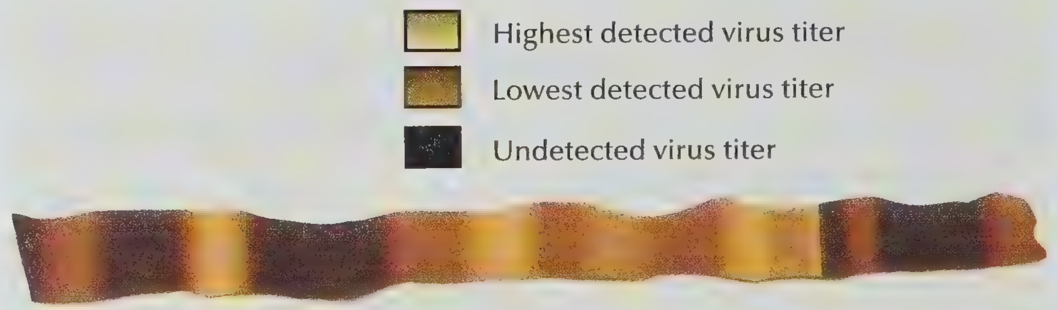
Figure II: Distribution of Grapevine Leafroll-associated virus-1 in a dormant cane. Multiple consecutive samples along the cane were collected and analyzed by ELISA.



mitted to assure a high degree of confidence in test results.

Test interpretation: Positive/Negative results in the laboratory

One frequent question is: When is a positive a true positive, and a negative result, a true negative? A positive result is certainty of infection. A negative indicates the pathogen was not detected.

However, a negative result can result when the target pathogen is below the detection threshold of the assay. This can occur when the incorrect plant part has been sampled, or the sample was collected at a less than ideal time of year, or when multiple vines have been included in a single sample. This is known as a false negative.

Likewise, a false positive is defined as a positive laboratory result when, in fact, the vine is not infected. A false positive should **never** occur, but it may occur.

In order to minimize false positive results, the cleanliness and reliability of the testing laboratory is essential. A false positive can occur if the laboratory handles the material with contaminated hands or gloves, creates cross-contamination from surfaces, instruments, or containers, or operates in a less than perfectly-clean manner. All assays must include positive and negative controls. The positive control demonstrates the assay protocol is working and negative controls will indicate no cross-contamination between samples.

One situation than can lead to a false positive result is when the methodology used to detect a pathogen is not specific enough to it, thus detecting other strains or variants of the same pathogen. However, in this case the assay is at least able to detect the presence of a pathogen — although not specifically what was sought.

Strains and variants of each pathogen might be as harmful as the type-isolates and for assay purposes, tests are usually developed to detect a broad range of the isolates of each pathogen.[4]

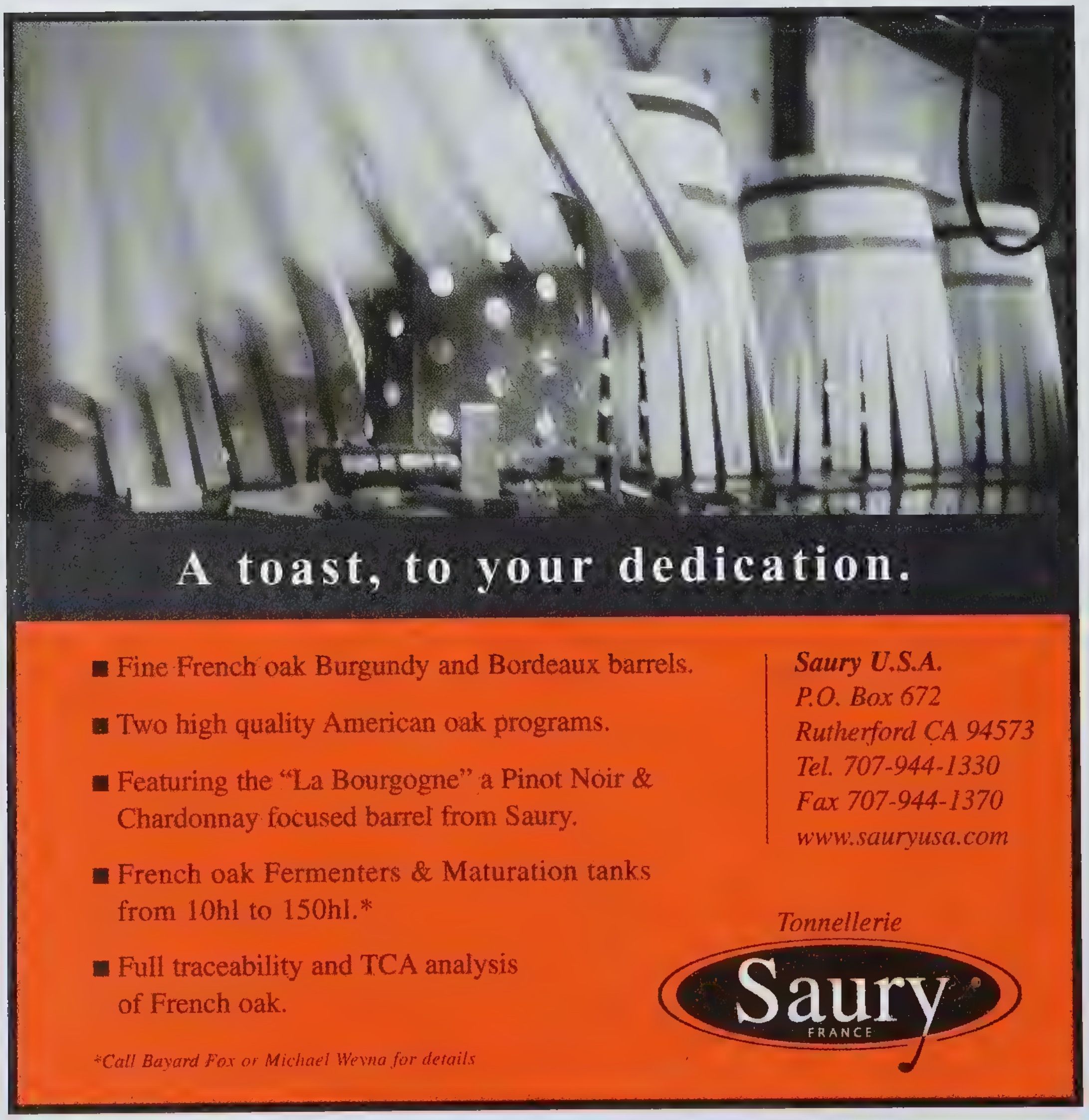
Causes for false negatives may be seasonal variations in pathogen levels or erratic distribution of the pathogen in the vine or lack of characterized pathogens (e.g., the presence of a new disease agent), or lack of optimized detection methods, or improper use of controls.

If a grower sends samples from symptomatic vines for testing without knowing the cause — a laboratory might complete a full viral and fungal panel and find no evidence of infection of known pathogens. However, the vine might still be infected with an unknown pathogen. A false negative might be reported because the pathogen has not been characterized, i.e there is no available method for detection.

It is imperative the client knows and understands the sample collection process and has confidence in the laboratory where submissions are sent. In many cases, submitting additional samples will help determine the cause of disease.

Conclusions

It is the hope of the author that the answer to the question, (what shall be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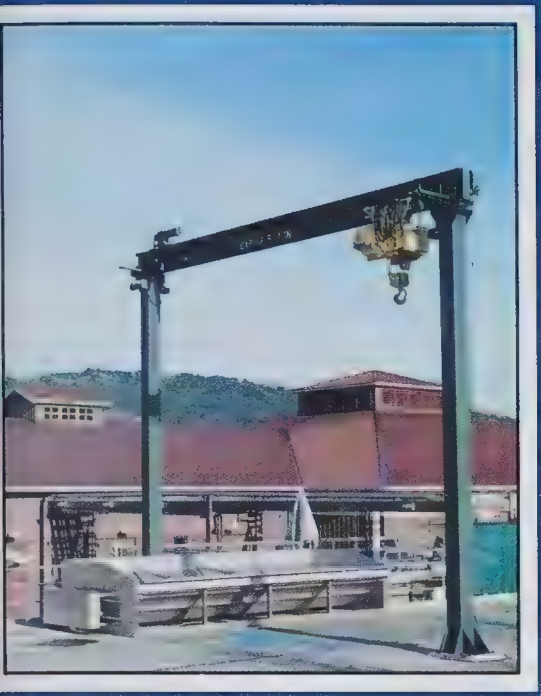

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Sorting Conveyor with Crusher Mounted on End designed and built Darioush Winery, Napa Valley tested and when?) is more clear. A good strategy is to always test grapevine stock prior to planting to assure the health of a newly-planted vineyard.

Although, testing an established vineyard might be too late to solve an existing problem, testing is advisable to pinpoint the cause of a problem, avoid the spread of certain pathogens, and determine the feasibility of using the vines for further propagation or top-working.

Submitting as many samples as the budget permits (more than one sample per vine), will increase the chances of detection of viruses that are unevenly distributed.

There are several reasons for testing grapevines for disease agents. When materials are collected for propagation, tests must include both rootstock and scion mother plants. Also critical is an understanding of optimal plant sampling procedures and seasonal variability.

Confidence in the testing results — to minimize chances of false positives or false negatives — is best achieved by using a laboratory that employs careful methodologies and controls.

Growers and vineyard managers should work closely with a plant pathologist or consultant to determine the laboratory that best fits their needs. The decision to include laboratory testing to make strategic planting and financial plans is an important step to successful vineyard management. ■

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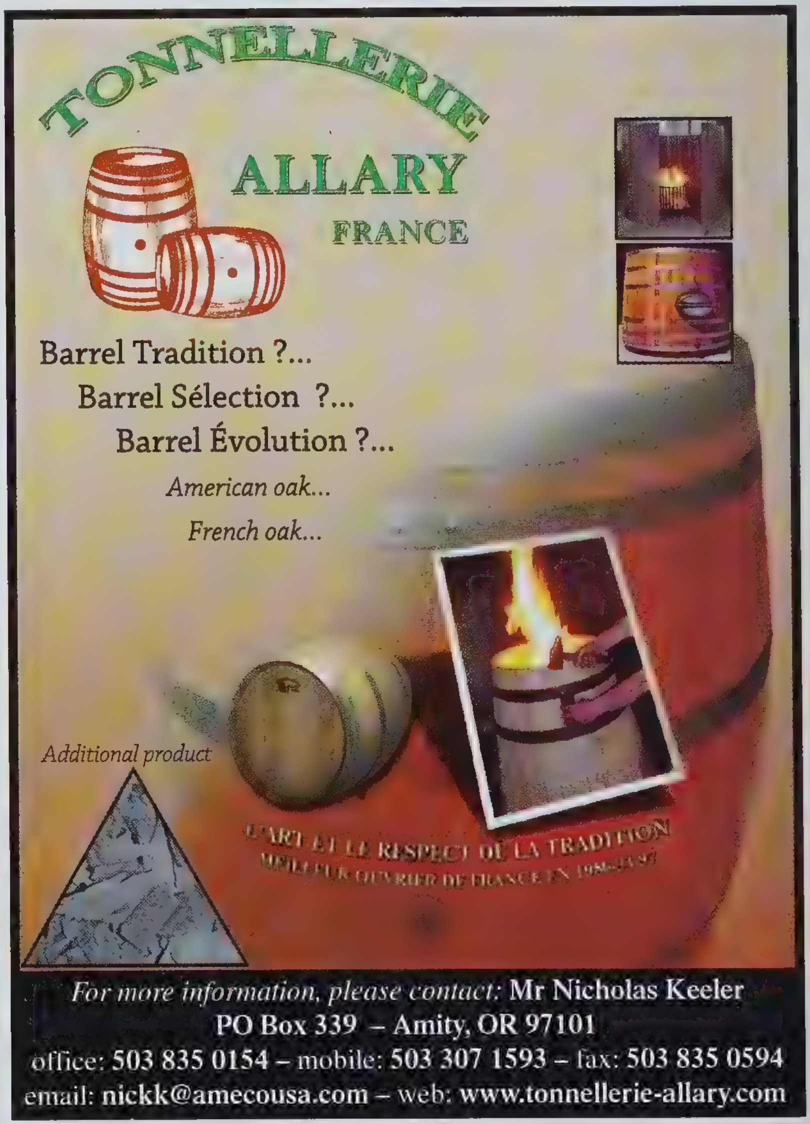

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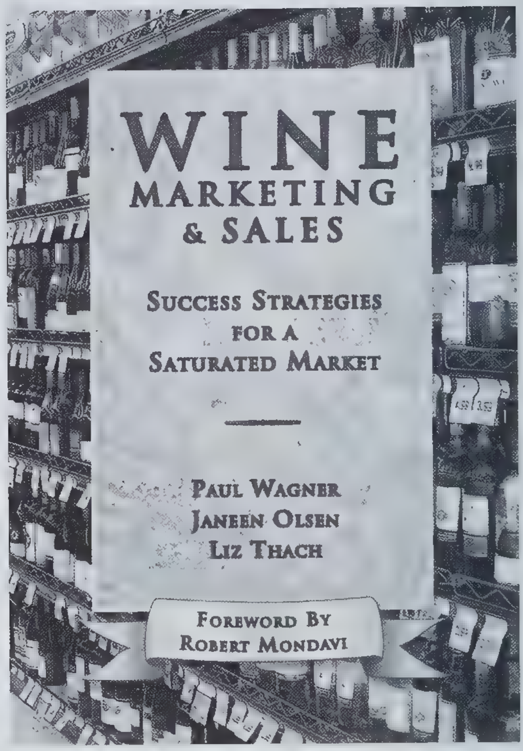
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Wine industry insiders often speak of brands in terms of "labels" because the impact of a label is so important in the wine business. It is so important that many wine marketers add a sixth "P" to the traditional five "Ps" of marketing. In addition to Product, Price, Placement, Promotion, and Position, they add the critical element of wine marketing: Packaging. Of course, in traditional marketing, packaging is included in the concepts of product and promotion, but in wine it is so important that it really deserves its own "P."

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ON THE BRAND-LABEL:

1. **Brand Name** (27 CFR 4.33) The name under which the wine is marketed OR the name of the bottler or importer, if there is no brand name.
2. **Class or Type Designation** (27 CFR 4.34) Gives the specific identity of the wine. An approved grape varietal name, a semi-generic name or name of geographic significance may be used if an appellation of origin is also stated.
3. **Alcohol Content** (27 CFR 4.36) Must be stated as "Alcohol __% by volume" or "Alc __% by Vol." or "Alcohol __% to __% by volume." "Table Wine" may be used if the wine is not over 14% alcohol by volume.
4. **Percentage of Foreign Wine** (27 CFR 4.32(a)(4)) For blends of American and foreign wine, the percentage and origin of the foreign wine must be shown, if reference is made to the presence of foreign wine on the label.

ANY LABEL:

5. **Bottler's Name and Address (American wine); Importer's Name and Address (Imported wine)** (27 CFR 4.35) If the wine is bottled or packed after importation, the name and address of the bottler or packer must also be stated.
6. **Net Contents** (27 CFR 4.37) Must be stated in the same manner as the metric standard of fill for wine given in 37 CFR 4.73 (i.e.: "750 ml" but not "75 cl"). May be blown or etched into the glass. For imported wine, a sample bottle must be submitted with label application if the net contents is not shown on the label.
7. **Sulfite Declaration** (27 CFR 4.32(e)) Required for wine containing 10 or more parts per million sulfur dioxide. Must read "Contains Sulfites" or "Contains (a) Sulfiting Agent(s)." May be omitted if evidence of analysis is submitted with label application that the wine contains less than 10 ppm.
8. **Health Warning Statement** (27 CFR 16) Must appear on all alcohol beverages for sale or distribution in the U.S. containing more than ½ of 1% alcohol by volume. See 27 CFR Part 16 for required language and format.
9. **Country of Origin of Imported Wine** (U.S. Customs Service requirement) Must state the country in which the wine was produced.

(Note: This is a summary, and may not contain all requirements. Users should refer to the full text of the Federal Regulations listed.)

That's what the U.S. Government wants from your packaging. It's hard to imagine another consumer product with this kind of regulatory labeling, but this is the wine industry in a nation that is still recovering from the effects of Prohibition. We have to keep the government watchdogs happy.

Tobacco Tax and Trade Bureau (TTB) requires that your wine label contain the following information, before it can be considered for approval.

Label design issues / success factors

In designing a wine label there are some givens, such as the U.S. government requirements, that must be included on all labels. If not, they will not be approved to use in wine sales. However, once these requirements are met, then much creativity can be unleashed to design labels that are attractive and appealing to your target audience.

Designing labels to attract target audience

As with all other marketing communications programs, it is critical to define your target audiences and define what they want. It would be really easy if they all wanted the same thing. They don't. Always keep in mind that your packaging will not only attract your customers, it will also play a role in deterring other customers from trying your wines.

This is easy to understand if you go back to the concept of the label as a billboard. Some billboards work well with some audiences, but as Abraham Lincoln once said (and we paraphrase here) "You can't use one billboard for all the people all the time."

What does a billboard do? It creates an immediate impression. When a consumer sees your label on the shelf, you only get a second or two to make a good impression. It must stand out from the competition. It must grab the eye and steal attention from the rest of the products on the shelf. This is not a place for discreet wallflowers. That part sounds easy.

Consumers don't want loud and flashy wines

Why not just make a really big, bold, bright label that can be picked out at twenty paces? The answer is because the kind of impression consumers want from their wines isn't loud and flashy. Most consumers think of wine as a stylish, elegant, sophisticated purchase. Your job, then, is to create a label that is big, bright, stylish, bold, elegant, loud, sophisticated, flashy …

This is getting harder, isn't it? In some ways, the perfect label is like the perfect date. Yes, there are those dates that are really attractive in a loud and glamorous way, but your wine should be like the date you want to bring home and meet your parents. Your label must be absolutely attractive, but it also must stand for something more than just a good time. Wine, for many consumers, is more important than that.

All consumers are not created equal

The danger of course, is that all consumers are not created equal. While traditional wine consumers seem to really like traditional label styles, complete with ivory-colored paper and gold foil, there is a new generation of wine drinkers that is attracted to fun, innovative, and irreverent labels.

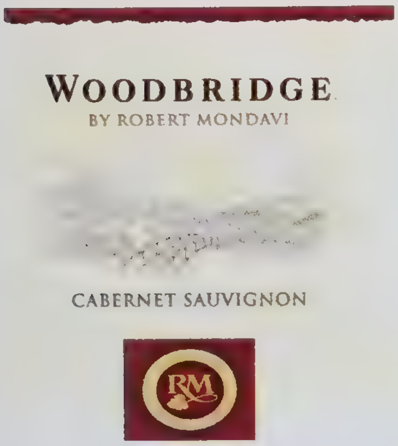
A few years ago, names such as Starved Dog Lane, Fat Bastard, and Cat's Pee on a Gooseberry Bush would have been unthinkable. Now they reach out to a new generation of wine drinkers — or at least their producers hope they do!

Beware. Those labels may well attract new and younger wine drinkers, but many traditional wine consumers see them as an abomination. Be careful that in attracting one group of consumers, you don't drive away an even larger group. Your label will not only define your positioning, it will also define your target market in a way that was not foreseen a few years ago.

Label design is predicted by classic marketing theory

This trend to be more creative with wine label design is predicted by classical marketing theory. As a category gets saturated, producers look for ways to stand out, and consumers look for new and interesting things. Pushing the envelope becomes more than just an expression, it becomes an economic necessity.

All of this may seem quite innovative and exciting to those of us in the wine business, but compared



Woodbridge by Robert Mondavi features traditional ivory paper and scenic vineyard, on its labels.

1973, en hommage à Picasso (1881-1973)
Château Mouton Rothschild
1973
PREMIER CRU CLASSE EN 1973
LE BARON PHILIPPE PROPRIETAIRE
PAUILLAC
73 cl
1981
Château Mouton Rothschild
PAUILLAC

If it ain't broke, don't fix it — Chateau Mouton Rothschild's artist series labels are world famous. The winery continues the same basic layout from year to year, only replacing the featured painting at the top of the label.

Rex Goliath brand targets a younger market with its whimsical, colorful, irreverant label design.

to other beverages, wine packaging is still as conservative as it gets. To obtain a much better idea of what is possible, go to a liquor store and look at the shelves of liqueurs and aperitifs. You will see a panorama of wild and wonderful bottle shapes, each one a work of art. The colors range from bright yellow and blue to gold and silver. They do not need to fit in a refrigerator door, or stack neatly in a wine rack, and therefore these packages are not constrained by many of the limitations of the wine business.

Now look at the shelves of wine. The wine industry has a long way to go before it can call itself innovative when it comes to packaging. Until recently, wine bottles were usually limited to a few very traditional and somber colors. The shapes of the bottles were usually one of three or four that can trace their roots back to the European wine regions of 200 years ago. Now we are seeing a few new shapes, and many new colors. Most importantly, there is a whole new sense of making wine approachable.

When should you change your packaging?

This is one of the great questions in wine marketing. Classic marketing teaches that your message must be timeless. You should have a package that effectively communicates your brand message, and will continue to do so for the long term. After all, it takes years for these messages to work their way into the mind of the consumer, and your packaging is the single most important interface with the consumer.

One suggestion is that you develop a perfect packaging solution, use it for all of your products, and never change it. This is basically the philosophy of the great Chateau Lafitte Rothschild in Bordeaux.

There is ample evidence from the fashion and automotive industry that each year is a new opportunity to develop a new relationship with your customers, and each year should be the occasion of a new package that correctly conveys how perfectly your brand fits into the latest lifestyles of your target customers. New colors, new typefaces, and new looks are all the rage, and your winery will want to stay on top of the latest trends.

Bear in mind that these trends change every year, so such an approach will be out of style within months by definition. Therefore, in the wine industry, where labeling and bottling must take place months (and in some cases years) before the wine is released, this would seem to be a very difficult process to manage, not to mention an expensive one.

Another recommendation is that you develop a standard wine label design, but change one element on it each year as you make the announcement of a new vintage. This is essentially the philosophy of the great Chateau Mouton

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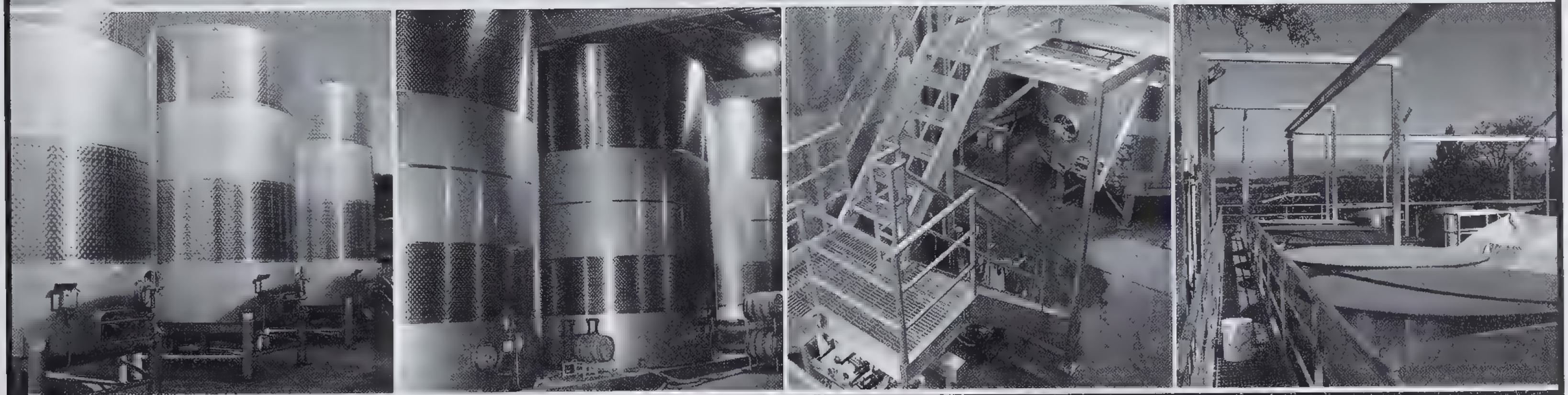

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Rothschild in Bordeaux, who maintains the same label design, but replaces the painting on it each year.

Art of marketing

This is where marketing becomes more of an art, and less of a science. Market research on labels is fascinating stuff, but all too often, the research doesn't lead to easily understood conclusions. If you are looking for one label that will make everyone happy, you are going to be disappointed.

However, it is difficult to bring yourself to go to market with a label that you know will drive some customers away. Therefore, some wineries hem and haw, fiddle and poke, and drive their designers crazy. In the end, wine packaging still continues to be far too traditional for good marketing implementation.

There are no easy answers

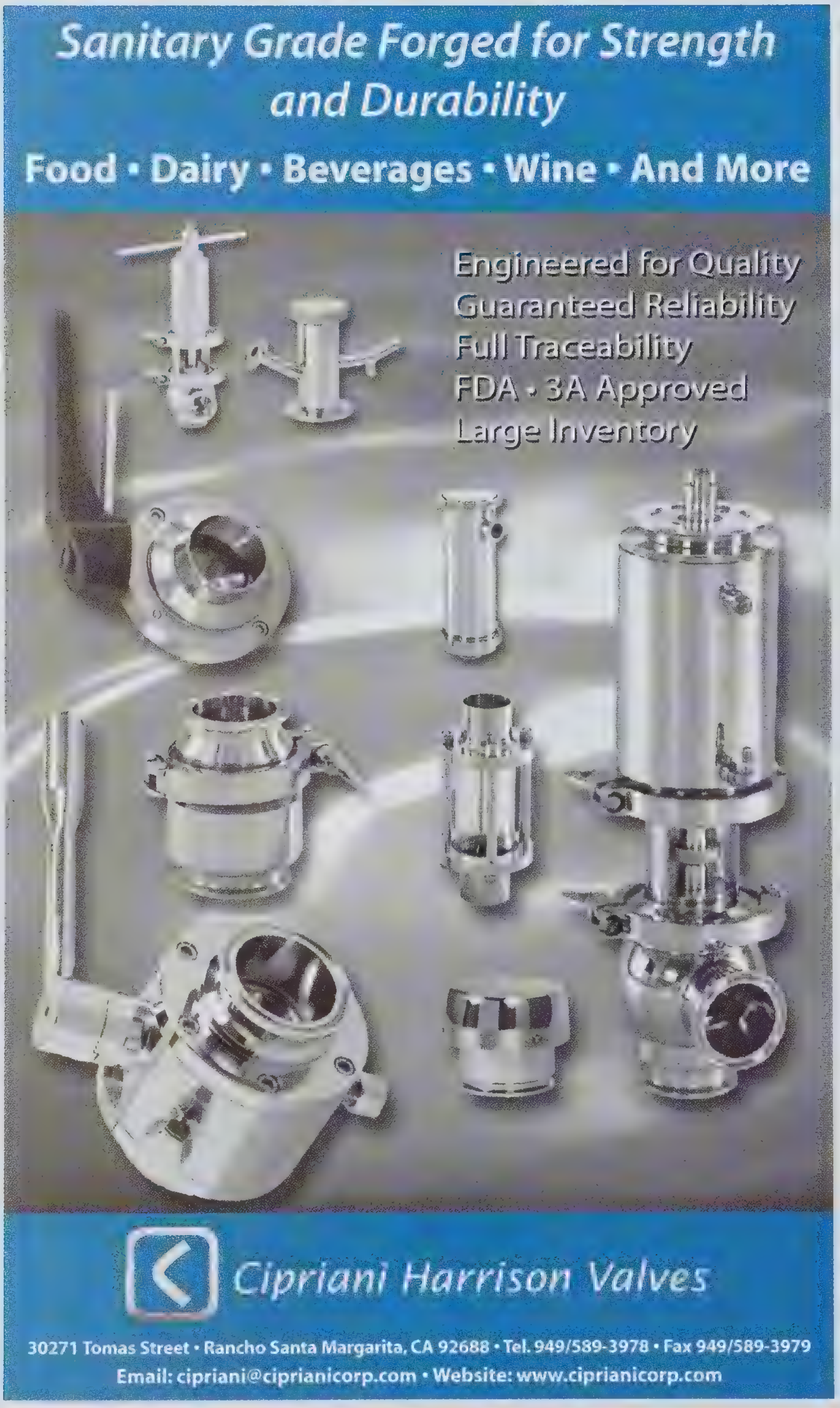
If you ask your sales team about your label, the answer is always simple. When sales of your wines slow, it is time to change the packaging. Most of them would argue that the time to change is before sales start to slow, as a pre-emptive measure. This is because when sales people often have no news to share with customers about a wine, they look to the label as a way to generate interest in a brand that has nothing else to offer. In this type of situation, the solution is not to change the label, but to give the sales force the kind of news they need to effectively position and sell your wine.

What's next — wine in tetra-packs or six-packs?

The American market seems to be considerably less eager to try new packaging trends than some other wine-producing countries. Australian wineries have been able to sell top quality wines in bag-in-box packaging for a generation now, but many American wine drinkers still resist this idea.

But wine in America is less about convenience, more about style. A few producers have had some moderate success with more expensive wines in bag-in-box packages in the U.S., but they are still a long way from being a major player in the market. Much of that has to do with one of the great challenges of wine packaging in America: when a packaging element is adopted by inexpensive wines, it becomes less attractive to more expensive wines.

Of course, when a packaging element begins to be recognized as a symbol of quality (a "quality cue" in packaging terminology), every inexpensive wine tries to adopt that packaging as part of their brand. Then once a packaging element has been used extensively by inexpen-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sive wines and brands, it loses all consumer appeal as a quality cue. It becomes, instead, a quality detractor.

This cause and effect relationship quickly forces most packaging innovations off the table for higher-quality, and higher-priced wines. It has prevented more widespread use of screw caps, bag-in-boxes, aluminum cans, and other interesting, approachable, and fun ways to package wine.

For at least one generation, the American wine industry has bemoaned the fact that wine is perceived as a formal and intimidating beverage. However, when the issue is packaging for their own wines, they draw the line. An affordable, well-made varietal wine in simple, consumer-friendly packaging is a wonderful idea for consumers, but it will not help establish the prestige and perception of quality for a top-level brand. It may in fact, drag that prestigious brand down a notch in the eyes of the consumers and trade.

The irony of all of this is that there are already affordable, well-made varietal wines in simple, consumer-friendly packaging. They are in every supermarket, and they sell reasonably well, but they are not elegant, nor expensive.

Wineries looking to distinguish themselves from a vast wall of competitive brands should explore new packaging options, and take the kinds of risks that offer great marketing rewards. New categories remain undiscovered, new consumers await just the right product or campaign, and new marketing approaches will succeed where less innovative ones have failed in the past.

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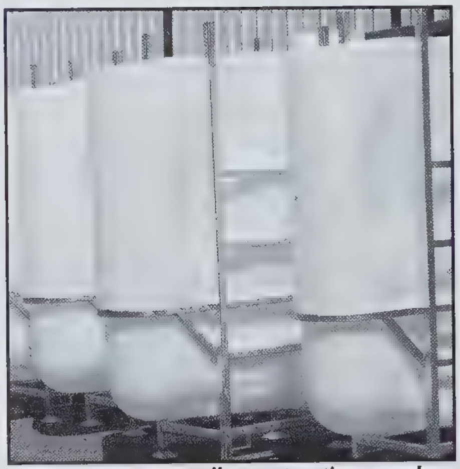

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Your label must stand out

There are no hard and fast rules for label design. Labels must be an expression of the vision of the brand, and that requires two key elements. You must have a clear vision for the brand, one that you can explain, discuss, and present to everyone on your sales team and your graphic designer. You also must have at least one individual who can determine which graphic image successfully captures that vision and communicates it to the target markets.

For most small wineries, the idea of creating a massive market research budget to achieve the second goal is beyond their means. They will have to depend on their designer and their marketing team to make that determination. This means they will ultimately invest the future of the brand in those decisions.

If the design is good, and the decision-making is sound, then your packaging will give you a solid advantage over your competitors in the market. If not, then your sales team is right: It is time to re-design the label.

Nothing captures so many of the inherent conflicts in wine marketing better than packaging. The challenge, as always, is to come up with a combination of ingredients in your packaging that defines your position, attracts potential customers, and does not give others a reason to reject your product on face value. It should be unique and different, yet attractive to consumers in a very traditional industry. ■

[Excerpted from WINE MARKETING AND SALES, Success Strategies for A Saturated Market, Published by The Wine Appreciation Guild, San Francisco, 2007.]

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EXCERPT from Australian book

MARGARET RIVER, WESTERN AUSTRALIA

PRECISION VITICULTURE TECHNOLOGIES TO IMPROVE PRUNING EFFICIENCY

BY Tony Proffitt,
AHA Viticulture,
Dunsborough, Australia

Following the recent introduction of Precision Viticulture (PV) technologies to the Australian grape and wine industry, grape growers and winemakers are becoming more aware of the inefficiencies in the way that inputs (such as water, fertilizer, labor, and machinery) are sometimes applied to vineyards.

PV technologies are now being used to identify different zones of characteristic vine performance within individual blocks and to manage them accordingly. This article describes a recent experience in the implementation of zonal vineyard management to reduce pruning costs since this is generally the highest annual production cost and to increase staff retention due to a shortage of skilled labor.

The study was conducted at a vineyard in the Margaret River region of Western Australia. Digital Multi-Spectral Imagery (DMSI) was acquired at 0.5 m resolution close to veraison and imagery was produced using the ratio-based vegetation index referred to as Plant Cell Density (PCD). The imagery was ground-truthed and then used to identify zones of high, medium, and low vine vigor in a 8.3 hectare (20.5 acre) block of Shiraz (Figure 1). The block was planted in 1998 and the vines are cane-pruned.

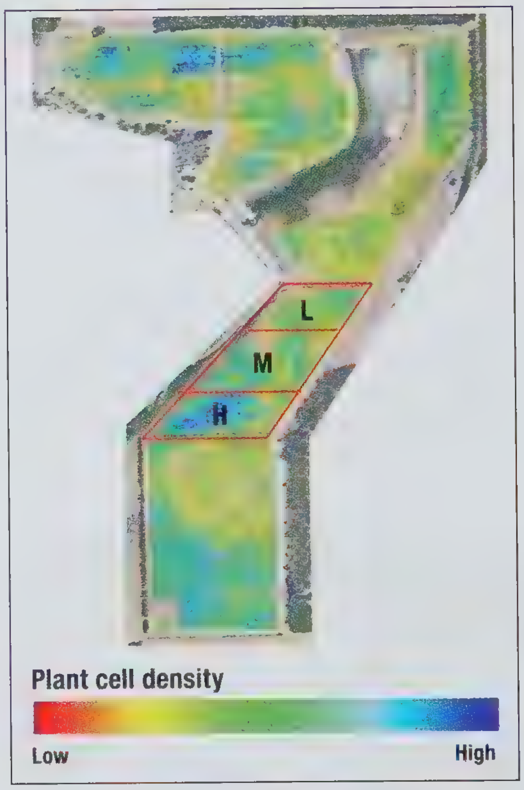

Figure 1. Plant cell density image acquired at veraison for a 38 hectare vineyard in Margaret River, Western Australia. The Shiraz block used for the study (8.3 hectares) is shown by the red boundary lines. The three different pruning zones of contrasting vine vigor are identified as high (H), medium (M), and low (L).

"Piece rates" per vine were determined for each zone according to the amount of time allocated to prune vines within that zone (Table I). Piece rates in this context refers to the process of allocating a cost to the different component parts of the whole pruning operation (refer to the foot notes in Table I).

Each person was free to work as fast or as slow as they wished since each "piece" completed was paid at a set rate. The faster the operators worked, while maintaining a certain quality of work, the more money they made. All operators needed to be able to prune an equal number of vines of varying vigor, and hence degree of difficulty.

The benefit of using the PCD imagery before pruning started was that operators could be given a certain number of "easy" and "difficult" rows to prune so that it was fair to all.

After pruning had been completed in the block, the total cost of the operation using the PV zonal management approach was compared to the total expected cost had the traditional uniform management approach of pruning been implemented. The cost shown using the uniform management approach is approximate since this methodology was not actually implemented.

However, it is estimated that there was a cost saving of approximately $2,400Aus (11.6%) by implementing a PV zonal pruning management approach.

In addition, all pruning staff made similar amounts of money, which ensured that morale remained high and staff truancy remained low, which enabled the pruning operation to be completed within the required time period. ■

For more information about Precision Viticulture *and further case studies demonstrating outcomes achieved in vineyards, refer to Proffitt, T., R. Bramley, D. Lamb, and E. Winter. (2006).* Precision Viticulture. A new era in vineyard management and wine production. *Ashford, South Australia: Winetitles.*

Summary of Precision Viticulture

This book describes a range of tools and technologies that enable vineyard management to be practiced at a level of precision previously unachievable. How does someone interested in using these tools make a start in adopting Precision Viticulture practices? Learn how spatial information should be acquired, delivered, and used and arm yourself with the questions that need to be asked of a service provider. The practical applications of Precision

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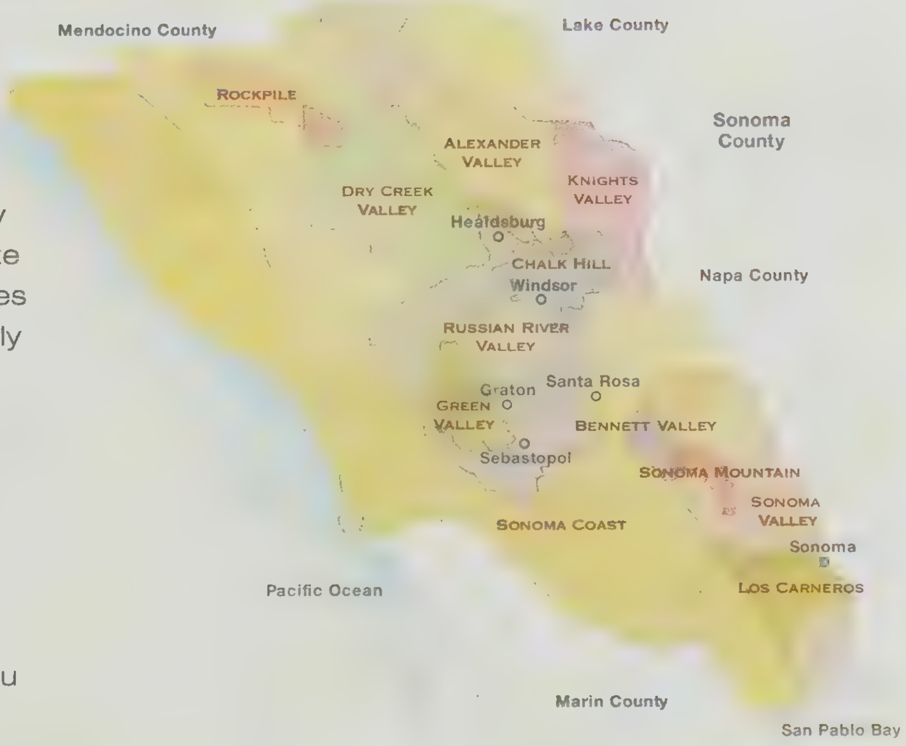

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Table I. Piece rates and total pruning costs in a 8.3-hectare block of Shiraz comparing zonal and uniform management methods.

Pruning method	Vine number	Lopping cost/vine# ($)	Pulling cost/vine* ($)	Wrapping cost/vine+ ($)	Total pruning cost ($)
Uniform	12,445	0.42	0.40	0.85	**20,783.15**
Zonal					
High vigor	2,578	0.44	0.42	0.92	4,588.84
Medium vigor	5,562	0.37	0.35	0.76	8,231.76
Low vigor	4,305	0.31	0.30	0.68	5,553.45
Total					**18,374.05**

refers to the cost of selecting canes to retain and cutting the canes to remove.

* refers to the cost of pulling the cut canes out from the canopy and foliage wires.

+ refers to the cost of cutting the retained canes to the correct number of buds and wrapping the canes to the fruiting wire.

Costs are in Australian dollars.

Viticulture are a central theme to this book and a number of commercial case studies are presented.

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Are you selling 1,000 cases online?

**BY Deborah Steinthal, Founding Partner,
Scion Advisors
Paul Mabray, CEO,
Inertia Beverage Group**

It is 2:00 AM. Do you know how much is selling through your e-commerce channel? Are you selling 1,000 cases of wine through e-business? If not, it's time to tune up your e-commerce sales engine! You may be behind the times.

In 2007, at least 75 California wineries sold over $500,000 worth of wine (1,000 cases), on-line, based on Inertia Beverage Group and Scion Advisors client perspectives. While 40 of these are highly allocated wineries using the Internet as an order-fulfillment tool, at least 35 others are solidly selling through this highly profitable channel.

The top-selling 35 wineries have these things in common:

1. A very loyal base of direct customers — most have wine clubs exceeding 2,000 members;
2. Over 60% of online sales are from club members reordering or responding to new offers;
3. All have at least one half-time person allocated to managing the channel;
4. Their websites are ***not*** among top-ranked, user-friendly, shopping sites;
5. Both the wineries and their consumers have an online history (at least a five-year learning curve from the launch of e-commerce).

Laurent Sarazin, Sales and Marketing Director at Schramsberg Vineyards and J. Davies Vineyards (Calistoga, CA), gives an in-depth look at his successful e-commerce program. "This is our second most profitable channel after our wine club," says Sarazin, "and it is growing 50% each year with only half a person managing it!"

While many online innovators are actually selling wine, most winery CEOs are still pondering this digital medium. Weaned on the three-tier distribution system, wine industry leadership has lacked familiarity with the Internet and consequently has been slow to adapt.

Albeit later than the rest of the world, the Age of the Internet has finally descended upon the wine industry.

Aside from being the fastest growing channel for wine sales, the Internet rewards early adopters with unanticipated benefits. To start, properly executed e-commerce sales develop your brand, since you are communicating regularly with your most important consumers. It also enables real-time testing of new product pricing and promotion.

Figure 1: Best Practices Planning Template

		Inertia Beverage Group Benchmarks		
Tasting Room Objectives	**Metric**	**Small***	**Large****	**Goal**
Attract winery guests	# of guests per year	2700	4500	20% growth annually
Collect contact information	# of contacts per year	810	1620	Convert 30% to visitors to on-line mailing list
Wine Club Objectives	**Metric**			
Grow predictable revenue stream	Club membership per year	1367	3254	25% annual growth
Avg $ per shipment	Increase annually	79	79	2% avg/year increase in MSRP
Total cases sold annually (reorders)	Increase through club growth	1,172	1,971	
Total $$ sales/year	$$ of wine club sales to members	$542,953	$770,993	5% increase per quarter (club members or $ per order)
Repeat on-line sales to club	% of wine sold on-line to members	15%	15%	Monthly average if stimulated by e-blast
e-commerce objectives	**Metric**			
e-Mail blasts	Two per month	2	2	
Sell wine	On-line wine sales per month	$21,660	$57,455	Increase by 10% each month
	On-line case sales per month	45	192	
Increase volume of orders	# On-line orders per month	94	249	Increase by 10% per month
Increase avg $$ per order	Avg $$ order per month	$230	$230	Increase by 5% annually
Increase avg $$ per bottle	Avg $$ bottle per month	$40	$25	
Attract on-line visitors	# of visitors per month	9,000	18,000	Avg 300 unique visits per day
Collect contact information	# of new contacts	15	45	Avg new sign-ups through search engine optimization
	Total contacts	312	1264	Search engine optimization
Convert contacts to customers	# of new customers	47	100	76% 'contacts to customers' generated by tasting room
	Total customers	**14,358**	**37,455**	
Convert visitors to wine club	# On-line club signups per month	2	4	

* under 2,000 members ** above 3,000 members

Even wholesalers who may see e-commerce as the "evil competition" have evidence: consumers with direct ties to your winery become brand-ambassadors when visiting restaurants and retailers in their local markets.

Why is e-commerce so important to wineries?

How about a 75% gross profit margin? E-commerce can be three times more profitable than your wholesale distribution channel. Consider 1,000 cases of $30/bottle (MSRP) wine sold through a national channel with a 50% margin, earning $90,000. Reconsider the same 1,000 cases sold on-line, earning $270,000.

Wineries who are succeeding over the Internet report breathtaking growth. Schramsberg has seen e-commerce sales multiply 24 times in six years. However, Sarazin warns that the "build-up process" should not be underestimated.

There is a serious learning curve for wine consumers; they initially buy just a couple of bottles and if all goes well, they increase their order frequency and quantity.

Imagine two unique transactions per day on your e-commerce site at an order value of $178 per purchase. In one year, this adds up to over 720 customers and more than $120,000 in online sales. On average, these customers will purchase three more times over two years at that same price, generating another $363,000.

"This is not even ambitious," says Sarazin. "We now get nine orders per day, every day, all year long."

There has been a ripple effect for wineries that are successfully selling on the Internet. When you know your strategy is working with consumers, you are able to overcome distribution objections and help them gain perspective.

Sarazin claims, "Over the last five years, both our Internet and wholesale business has exploded for us — especially in markets where both wholesale and Internet sales are strong. Having this experience makes us better brand-stewards and better partners with distributors and trade."

Furthermore, wineries with well-thought-out product strategies are more confident and drive stronger overall performance for their business.

While your winery tasting room is a critical direct sales channel — vital to building relationships, gaining customer satisfaction, and enlisting wine club members — it is primarily a hospitality service.

Tasting room sales are limited by the number of people who visit your winery, perhaps once or twice over several years, and long-term customer relationships are hard to create, given the current tools afforded to wineries.

Tasting room Point of Sale (POS) systems are transaction-focused and not designed to be strong Customer Relationship Management (CRM) tools, thus limiting your ability to service your customers when they go home. However, most e-commerce services and systems today are CRM-enabled, allowing delivery of your

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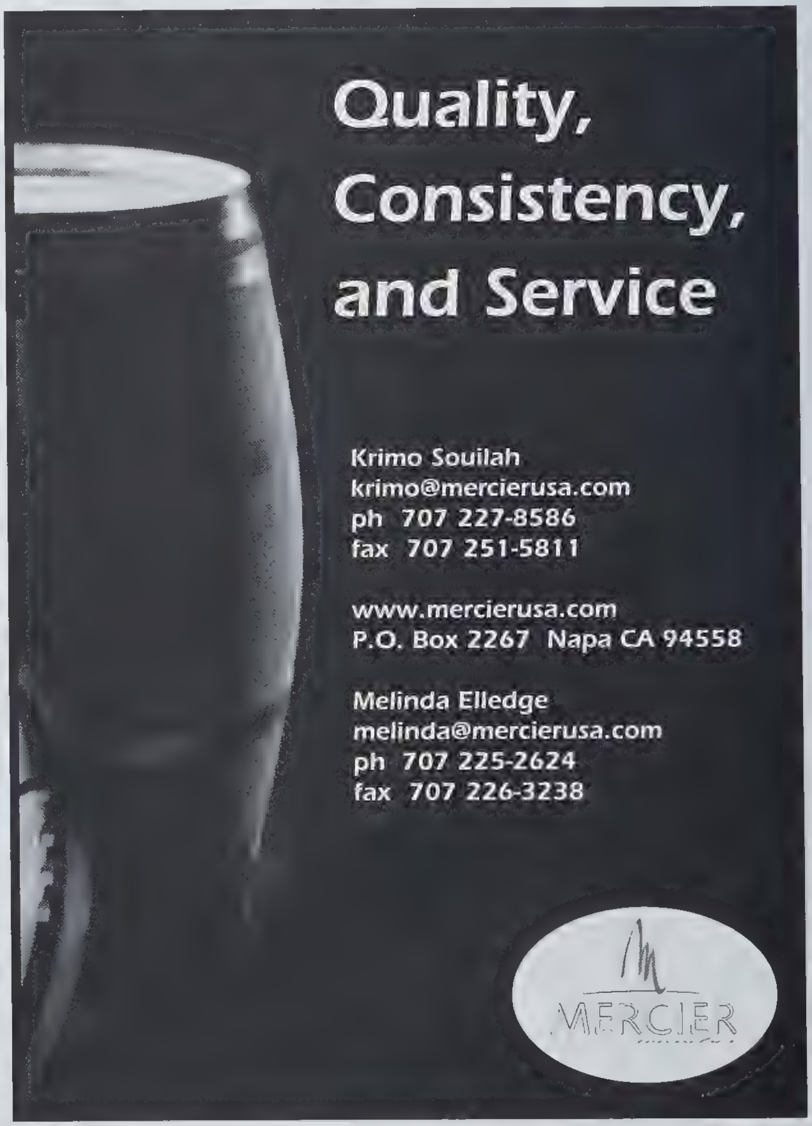
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Five key success factors:
How to ensure success in this channel

1. Find an e-business/direct sales expert who can demonstrate results.

Jackie Downer, CEO of Clos Pegase (Calistoga, CA), observes, "Someone has to pay attention to this (e-commerce) sales channel; when you feed it; it delivers immediately. When you don't pay attention, it simply goes away."

A common misperception is that by simply putting up an online store you enable sales. Your website launch does not guarantee that customer traffic will follow. In a way this is akin to building a tasting room and not implementing programs to encourage visitation.

A talented e-business manager should be able to run all off-premise direct sales for your club and all telemarketing efforts, and should be compensated from $65,000 to $110,000 per year depending on your size, their experience, and how much responsibility you give them.

E-business sales are very different from tasting room sales due to the need to plan campaigns, measure results, and build a customer knowledgebase. It requires a special expertise to create intimacy with a virtual customer.

2. Define a comprehensive direct marketing strategy.

Consider that your website may be viewed more than any other medium and is the great equalizer for your brand. It is the way your message can proliferate. This sales channel is an integral part of your overall winery brand positioning, so your e-commerce strategy should tie closely with your public relations, traditional marketing, club program, release schedules, and holiday events.

Your comprehensive direct marketing plan should include:

A. **Detailed Profit & Loss budget (P&L)** to help you and your staff understand and track the costs of doing business online.

B. **Detailed communication strategy**. Frequent, well-thought-out "special offers" ensure your target online consumers will buy directly from you. Reach out to your target group every three weeks with a communication that is interesting and relevant; if you are building an emotional connection, consumers will respond. Sarazin adds, "This requires discipline, focus, common sense, and a good dashboard to assess the results of each customer campaign."

C. **Strategies to convert new consumers** who have never tasted your wine, or purchased it online.

D. **Techniques, such as e-newsletters and involvement in wine blogs, that leverage emotional marketing**. Well-written, compelling winery newsletters that tell an authentic story get a 50% e-newsletter "read" rate — much higher than for newsletters in other industries.

3. Measure the success of your efforts through clear metrics.

First, you need a dashboard to know how you are doing and what is

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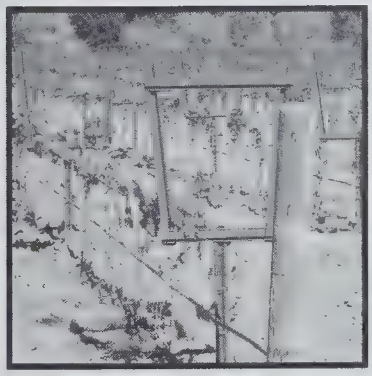

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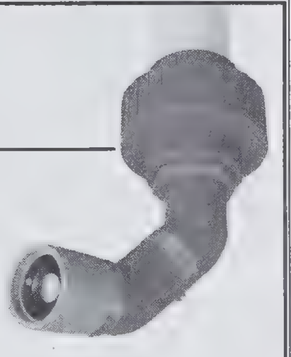

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driving the success of your online program. In Figure I is the Inertia Beverage Group's (IBG) best practices planning template, with key performance indicators to measure progress.

Second, you need to benchmark yourself against industry averages. The three right-hand columns represent monthly IBG winery benchmarks derived from Inertia's composite of their client base performance in this channel. In the online world, size matters, so conversion figures differ for small (under 2,000 members) and large (above 3,000 members) wine clubs.

Finally, e-commerce figures start looking a lot different when the winery begins recruiting from the web.

4. Build a comprehensive e-commerce solution.

Amazon has set the standard. Wineries building robust e-commerce sales know that this channel functions as a dynamic, integrated system of tools and services working to build brand relationships around happy customers. The good news is there are many e-commerce tools and services today; they are all evolving at a fast rate and are much more affordable.

Do your research and tailor an integrated, effective solution that really works — you have only one or two chances to win and keep online customers. You will need:

A. **A storefront** (a simple, robust website and shopping cart) that integrates 100% with the back-end of your business (compliant, error-free shipping). The shopping cart needs to have a sensitive path to purchase since the number of clicks it takes to order is inversely proportional to the sale. A strong shopping cart can be used for recording phone orders also, allowing you to track everything through one database.

B. **An e-mail service** that manages targeted marketing campaigns and incorporates strong CRM functionality, attached to your online store;

C. **A dashboard** that provides you with a full picture of your customers' purchasing patterns and the ability to address customer service requirements;

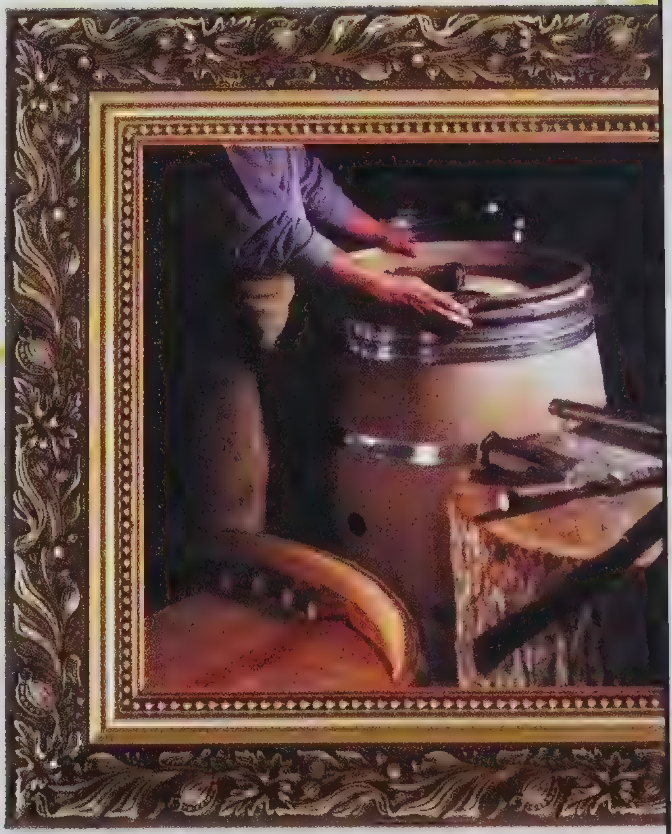
D. **A distribution partner** who manages your shipping logistics from order hand-off through customer receipt.

5. Deliver your product seamlessly.

A. **Advocate excellent customer service** — Regardless of the sales medium, consumers still respond to great customer service. Your methods can be electronically-driven, but the planning and structure need to be there so that you can maximize each unique relationship with impeccable execution. You can measure customer service success by tracking the number of repeat orders per customer, and the decrease in number of complaints.

Sarazin recommends, "Systematically take the high road with customers, even when they are asking for the ridiculous. When people ask for something, be sensitive to it. Profoundly listen to your customer — it pays off in the end."

B. **Overcome online product shipping hurdles** — Understanding how wine shipping impacts your business



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— it is expensive and cumbersome — should be core to your direct mailing strategy. Wineries are deploying innovative tactics such as the use of weighted averages, shipping discounts, pricing strategies, collateral reinforcement in packaging, and Third Party Logistics (3PL) companies.

C. **Manage compliance** — New compliance rules have added a layer of confusion, which can quickly lead to customer dissatisfaction. Imagine the consumer purchase experience: not being able to buy wine on one winery website, yet being permitted to on another; or wanting to buy three cases of a favorite wine for a party, but convoluted regulations restricting sales to only two. Even more confusing, non-winery on-line wine retailers have a different set of rules. This regulatory situation is not a friend of the winery. However, the ultimate success of individual on-line wine businesses is dependent on managing compliance.

Conclusion

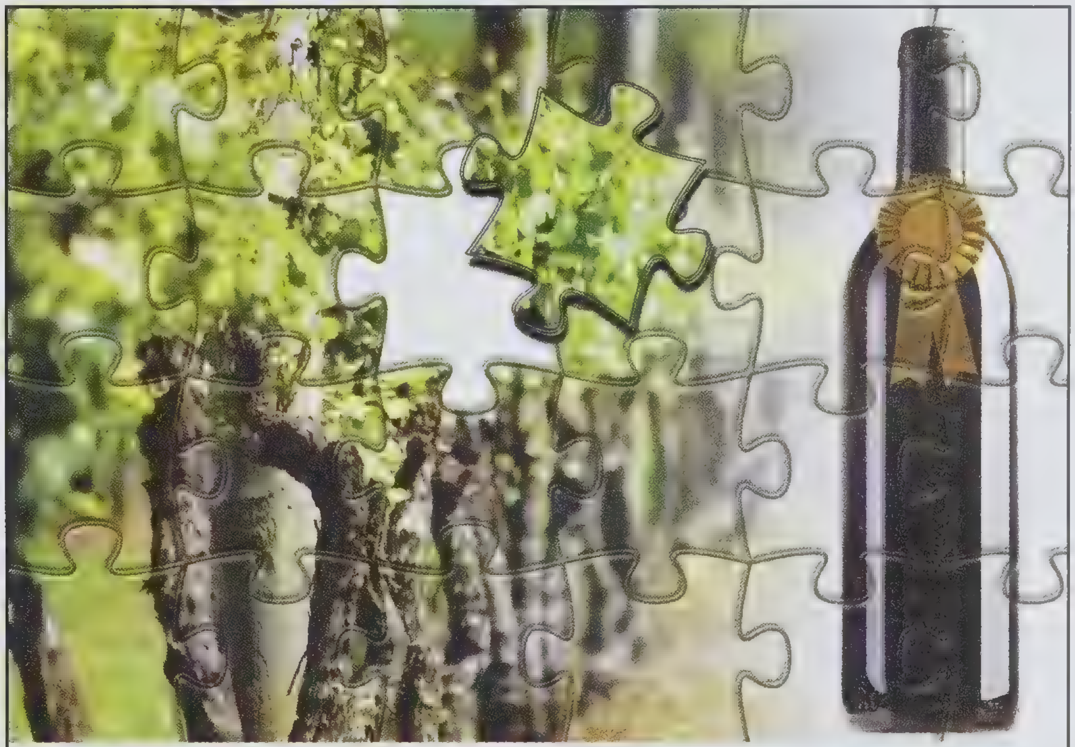
As an industry, we are still in the early days of benefiting from e-business. Because our most loyal customers want to buy directly from our wineries, this sales channel has the potential to grow into a very strong and healthy source of profits.

With a millennial generation of consumers fueling the future of our industry, we need to find ways to accommodate their purchasing habits, which currently largely skew to online. Fundamentally, we are no longer constrained by our winery walls or even by the distribution bottleneck that constricts our ability to reach people who love our wine.

Planning to build competitive advantage in your direct-to-consumer channel should include thorough discussions about your current brand strategy and how it fits in the changing marketplace. Before you develop a plan, you will need to factor in realistic market opportunity, competitive forces, staffing challenges, and how to navigate risk during execution.

We are at the beginning of a new era. Early adopters have a competitive advantage due to the learning curve, and are demonstrating the ripple effect of their e-commerce strategy throughout their overall business. How long will it take to tune your e-commerce engine? ■

Deborah Steinthal is Founding Partner of Scion Advisors, a family wine business advisory group. Scion Advisors works along side winery owners who are navigating challenging transitions; to drive better decisions that solve tough problems, build higher levels of performance and achieve long-lasting results. For more information, visit www.ScionAdvisors.com, or contact Deborah at 707/258-9130 or deborah@ScionAdvisors.com



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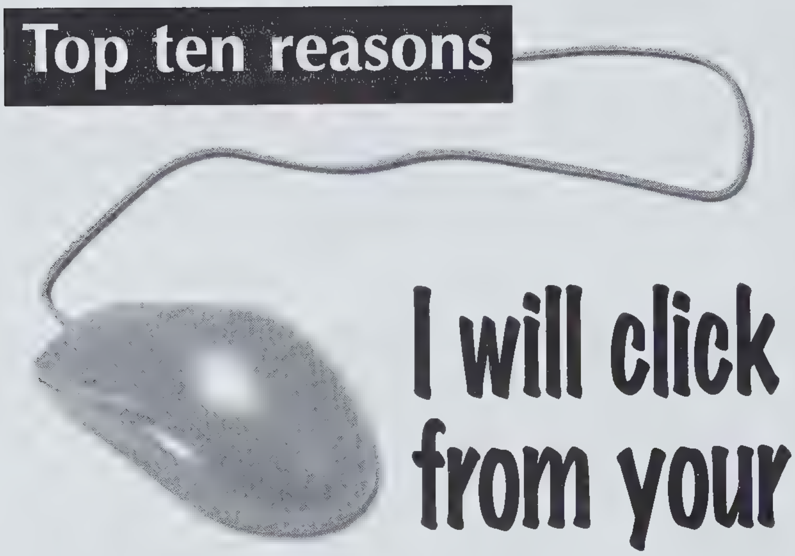
Top ten reasons I will click away from your website



BY Kurt Krause,
Addendum Marketing

Your website is a perfect venue for wine sales, the opportunity to tell about your wines, and also about your property, your winemaking process, the history of your winery, and your family of winemakers.

A survey conducted in February 2007 by Dr. Dennis Tootelian, a marketing professor at California State University, Sacramento, found that what most impresses American wine consumers is heritage. A large chunk (82%) of respondents who drink wine frequently say they would be more likely to purchase a wine if they knew it was "hand-crafted" from a family-owned winery with a long history of winemaking.

I'm sure you tell your winery story with gusto within your tasting room — and you can do everything on your website that you do in your tasting room, with the single exception of sampling wine.

But is your website a good reflection of the painstaking care that you use to create a good wine? Or are you hopelessly outdated and outclassed by the competition? Is your website nothing more than a one-dimensional "business card?"

I've visited hundreds of winery websites and viewed them from a sales and marketing standpoint. With a nod to David Letterman, here are the Top Ten Reasons an Internet surfer will click away from a website:

10. *Slow to load, flashy, loud home page —*

If your web design is more than one year old, it is probably loading way too slowly. There is a bit of flash or music or just plain noise that is impressive, but that's not why I am here, so I click past that.

Advice: If your home page makes me crazy, I am already in the wrong mindset to appreciate anything else you have to say inside. Somebody has told you that flash makes a good first impression. I am here to tell you, the opposite has occurred. Talk to me about your wine.

9. *Long web pages that scroll down, and down, and down —*

Most likely you developed your own website and either your template was set up with only so many pages, or you didn't know how to end a page and start a new one!

Your website looks unprofessional, and potential customers will think maybe you cut other corners. Not exactly the impression you want to convey, is it?

Advice: Most web surfers look for specific points that are of interest to them. Give them ease of navigation with plenty of buttons so they can find what they want to know. They will click around until their attention is caught. Today's surfers are not going to read your online book, they want to hit the high points of what you have to offer, looking for whatever it is they need to know before deciding on a purchase — and isn't that the goal of your website?

8. *A look that's too different, too cluttered, outside upscale industry standards —*

There is an old axiom in the consumer goods business: do not put ketchup in a mustard bottle. I always think of that when I see 100 winery websites that all have relatively the same feel, and then there is the odd one, the winery website that is so different, it's a bit of culture shock.

You wouldn't put Merlot in a Champagne bottle; don't put your website in primary colors, with a newspaper ad layout, or you will make people think you are a discount drug store.

Advice: You want your website to be different enough to stand out in the crowd, but you want to keep the attractive, tastefully upscale feel that wine buyers expect.

7. *Amateurish, blurry, unfocused, dark, boring photographs —*

It's hard to believe, in this digital age, that some websites are still exhibiting old photos that were developed at the drugstore and then scanned into a computer and uploaded, masquerading as professional product shots.

I guess you thought to yourself, "Anybody with a camera can take a photograph, I'll just line up my bottles and shoot!"

Would you expect your local photographer to grow grapes in his backyard and bottle wine from his bathtub?

Advice: Product shots are tricky, and require exactly the right, expensive equipment! And professionalism! Position and lighting are crucial. The pride you have in your wine, the months and years of care and hard work, should be reflected in your website images.

6. *Repetition of everyone else's clichés —*

"Good wine starts in the vineyard…"

"I am fulfilling a lifelong dream…"

"I have a passion…"

Some things are a "given." You are not in business to grow sub-standard grapes or to create a sub-standard wine. Do not insult visitors with clichés.

Advice: How is your product different from the run-of-the-mill? Say it in a way that makes me want to keep reading. Hire a professional copy writer or marketing company if you have to.

5. *Links that go nowhere, or go to an error page —*

That is the capital sin of web design. I will try it a second time, thinking it might have just been a temporary glitch. But then I will click away, irritated and disgusted with you.

Do you ever look at your own website? Have you tried the links lately? What is on that page that it keeps failing?

Advice: Isn't it obvious? Check your own site frequently! Fix it! Keep it fixed!

4. *Announcements of "upcoming events" that are outdated —-*

Surely this is a self-evident problem. This sends an awful message.

Advice: If you are in a busy season, or you are too preoccupied to check your own website to upload new events or at least delete the old ones, it would be better not to put any time-sensitive information on your website at all.

3. *Shopping cart surprise!*

Statistics show that 75% of all web commerce shopping carts are abandoned at check-out. Does this astound you? Maybe you are shaking your head because you are experiencing this yourself.

57% of online shoppers cite unexpected costs as the reason they click away, especially if the costs are perceived as excessive. Such costs may include shipping, the ever-obscure "handling," or a promised volume discount that I can't understand how to apply.

Advice: Let me know throughout the shopping process what to expect. Show me a running total of what I'm buying. If you honor coupons or discounts, let me know how to apply those easily and accurately.

2. *Your age verification calendar will not let me in!*

I'm not too young, I'm entering dates in the proper format, but I'm going nowhere. I will try again, thinking maybe I've entered something incorrectly, but the second time my entry is blocked, I will give up and click on to your competition.

Advice: If you are determined to use a fancy verification like this, then you'd better be sure it works. Check it every day. Fix it or give it up. The last thing you want is to prevent people from entering your site. Make it easy to enter… it can be easy and still legal.

The #1 reason I will click away from your website:

1. *Your web design is so last-year!*

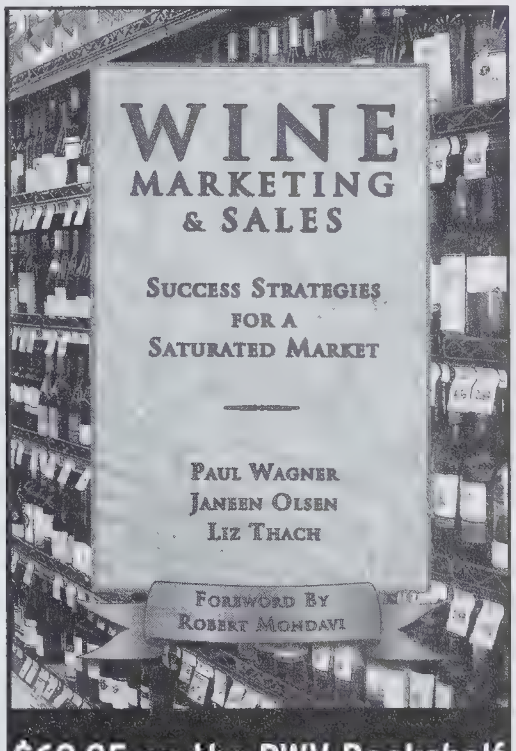
You have slow-loading graphics and photos that are sub-par. You think music and/or a flash introduction is high-tech. My eyes glaze over long before I get to the end of your rambling QuickTime video, assuming I have waited for it to load in the first place, and want to listen to the scratchy sound.

Advice: Don't put up a website that looks like a glorified business card and then abandon it for the next five to six years. Pay attention to what your competition is doing. Watch what's going on in the arena of web marketing and keep up with it. Don't wait to be the last one to move into this aggressive market — lead the pack! In the words of Jack Welch, former CEO of General Electric, **"Change before you have to."**

Your website, as a whole, is a marketing tool. It is a sales tool — your least expensive and yet most accessible salesperson, available to web surfers and shoppers 24/7. Each page should be designed with that in mind.

Drive your potential customers forward by giving them reasons to keep clicking within your website. They have short attention spans, they want to be **pro**-active, so give them something that's ***inter***-active. If they are enjoying their experience in your website, they will stick around and eventually decide they like you, they will like your wine, and they will make their way through your shopping cart. You will end up with a sale! ■

Kurt Krause has dedicated his career to introduction and integration of brands through the national beverage distributor network. Entrepreneurially-driven, Krause has a well-developed sense to spot niche opportunities and a keen intuition to make them work. He does consulting on marketing within the three-tier distribution system. Contact: Kurt @ AddendumMarketing.com



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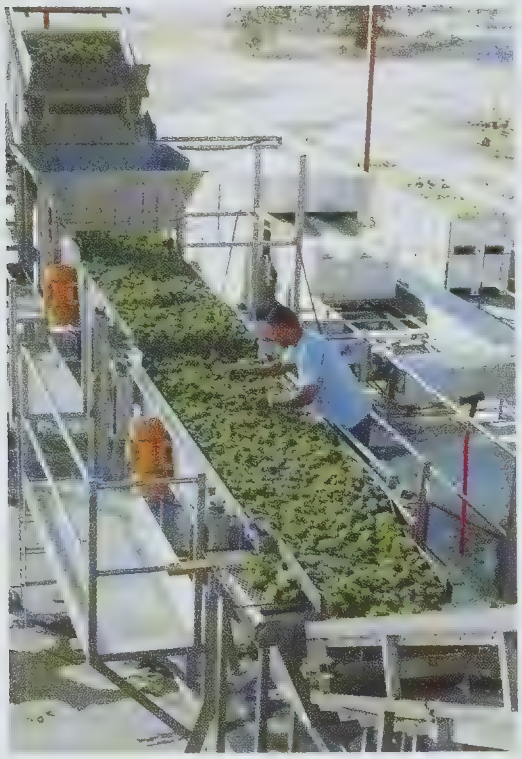

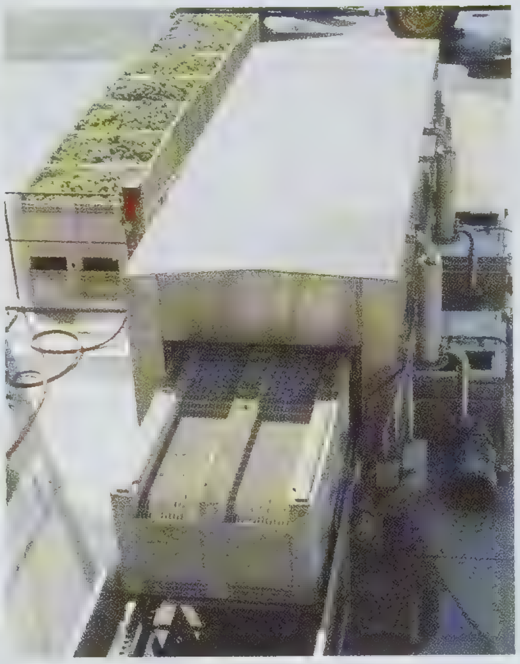

FAR LEFT: Two vibrating conveyors with a slight drop between, provide effective separation and delivery of a single layer of fruit to press or destemmer.

The automated bin washing system delivers clean bins to be collected for quick re-use.

BY Tina Vierra

Minimal handling and movement of hand-picked grapes in half-ton bins is the crush goal at Brassfield Estate (Clearlake Oaks, CA), according to winemaker Kevin Robinson. To achieve this goal, Robinson hired Sierra Manufacturing (Chico, CA) to custom-design grape receiving for the winery in 2006. The crushpad system had to meet the following objectives:

1) Ensure gentle treatment of fruit with minimal impact and handling;
2) Provide continuous receiving, metering, and distribution of fruit at a rate of 8 to 10 tons per hour of consistent feed to the destemmer or press, with minimum variation in flow, and minimum labor input/operator intervention;
3) Provide an effective platform for inspecting and sorting clusters to remove defects (MOG);
4) Offer built-in ease of cleaning to minimize labor and time to effectively wash the equipment; a key component is incorporation of vibrating conveyors.

At the front end of the system is a bin indexing station, accepting up to four half-ton bins of fruit ahead of the bin dumping station, to ensure full bins are always ready for processing.

A full half-ton field bin is automatically indexed into the bin dumping station as an empty bin is cleared and discharged to the bin-washing station. Brassfield chose to make the bin-dumping function manual, whereby an operator in the sorting area activates and controls the dumping.

Once a bin is emptied, it is "kicked" laterally into a gravity chute that simultaneously rotates and lowers the bin to a ground-level conveyor. Upside-down bins are conveyed into an automated and continuous, multi-stage washer equipped with high-pressure spray balls. Zone-one is designed to remove the field dirt and sugars. Zone-two provides a final wash and rinse. Each zone has a self-contained reservoir with heating capability, and belt skimmers for removal of floating trash. Fresh water is continuously topping off the reservoirs.

At the discharge end, the bins are indexed and rotated back to an upright position where they are discharged to an accumulation conveyor for pick up and stacking. The bin dumping and washing stations can handle up to 20 bins per hour.

The unique, combination receiving-sorting system utilizes two direct-driven vibrating conveyors, each 36 inches wide and 12 feet long, with independent speed control. The first conveyor is filled from a hopper, and acts as an initial metering device to separate clusters from the mass of fruit in the hopper. For many tight-bunch varieties, a full half-ton of

Continued on page 106

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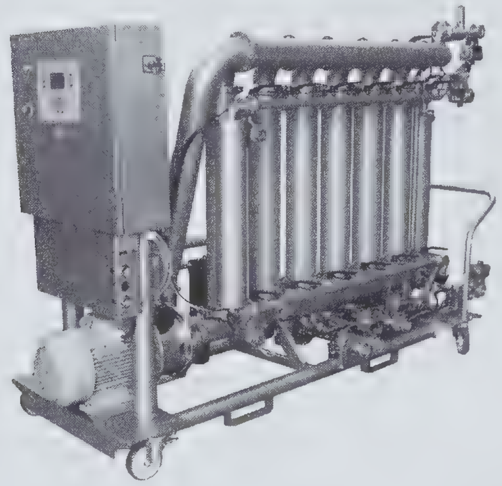
GUSMER ENTERPRISES

Gusmer Enterprises represents Bucher Vaslin cross-flow filters to the U.S. wine industry. There is an appropriate size Bucher Vaslin cross-flow filter for every winery and budget. Bucher's FX filters range in flow rate from 100 to 11,000 gallons per hour.



The Bucher Vaslin cross-flow design utilizes a low filtration pressure (maximum 1.2 bar) and operates with essentially no increase in wine temperature. An automatic back-flush system maintains an optimum flow rate, and eliminates the disposal issues/handling concerns of filtration media. The units are fully automated, and can operate around the clock, without direct operator supervision.

Evaluate a Bucher Vaslin filter at your facility with a demonstration unit. Full-time cross-flow technical staff is available for demonstrations, training, and service calls. Contact a Gusmer Enterprises representative for more details.

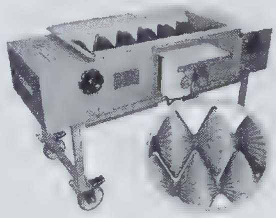
Gusmer Enterprises, Inc.

For more information, contact:
Gusmer Enterprises
Kathy Bollack, Dave Gusmer,
Bill Merz, Tim Ossun, Rodger Pachelbel,
Lauren Sloan, Ken Stewart
81 M Street, Fresno CA 93721
tel: 559/485-2692; fax: 559/485-4254
e-mail: sales@gusmerenterprises.com
website: www.gusmerenterprises.com

PLEASE SEE GUSMER ENTERPRISES AD, PAGE 28.

P&L SPECIALTIES

New in 2008 — P&L Specialties is the exclusive U.S. representative of Demoisy products, an industry leader in destemmer innovation and performance.



The Demoisy line includes a unique stand-alone crush-roller unit that features soft rubber cones for gentle opening of berries (not crushing), Mohno progressive cavity pumps, and vibrating separation tables.

The new 2008 picking lug washing machine is very affordable, constructed of stainless steel components with a solids collection system for ultra-efficient water use.

The Le Trieur™ (LT) — patent pending — MOG separator leads the industry in innovative functionality. The 2008 model features interchangeable separation screens allowing accurate control of MOG separation, making the LT™ an ideal choice for wineries processing different red varieties, and seeking fine separation control.

P&L Specialties distributes Sutter pneumatic membrane presses, recognized as premier products delivering excellent results. Innovative design provides precise pressing control, easy operation, and world-class Swiss reliability. Available in open-slotted or closed tank configurations (10 hL to 150 hL capacity), these presses are competitively priced, and backed with excellent service.

P&L Specialties offers "ounce of prevention" pre- and post-harvest service for the P&L Specialties, Sutter, CME, and Demoisy equipment. Also offering expert crush pad and cellar design, development, and engineering services. Please call early to obtain the best results.

For more information, contact:
P&L Specialties
1650 Almar Pkwy., Santa Rosa, CA 95403
tel: 707/573-3141; fax: 707/573-3140
e-mail: sales@pnlspecialties.com
website: www.pnlspecialties.com

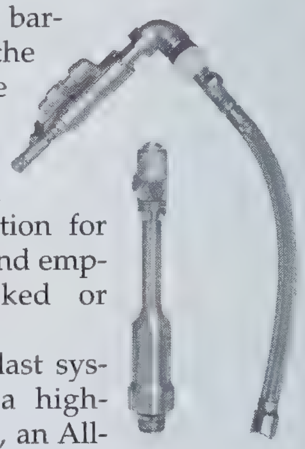
PLEASE SEE P&L SPECIALTIES AD, PAGE 82.

GAMAJET CLEANING SYSTEMS

For over 50 years, Gamajet has listened to customers, and developed a wide range of cleaning machines that advance the technology of cleaning winery tanks and barrels, while easing the cleaning burden of wineries throughout the world.

Responding to the need for effective tank cleaning, Gamajet developed the fluid-driven Gamajet 4, Gamajet 8, and Gamajet 9 machines, which provide powerful wash streams at low pressure. Tanks as tall as 50-feet can be easily cleaned, either from the top or from the bottom.

For better barrel cleaning, Gamajet has developed the HD Barrel Blaster, which features heavy-duty construction and a redesigned shape for smooth insertion. It is the strongest, most durable barrel cleaner ever made, lasting three times longer than previous machines.



For in-place barrel cleaning, the new All-In-One Flex combines impingement cleaning with vacuum extraction for easy cleaning and emptying of stacked or racked barrels.

The Evacu-Blast system includes a high-pressure pump, an All-In-One, and a vacuum pump — everything needed for in-place barrel cleaning. The Evacu-Blast HW mounts a hot-water-pressure washer supplying heated cleaning solutions.

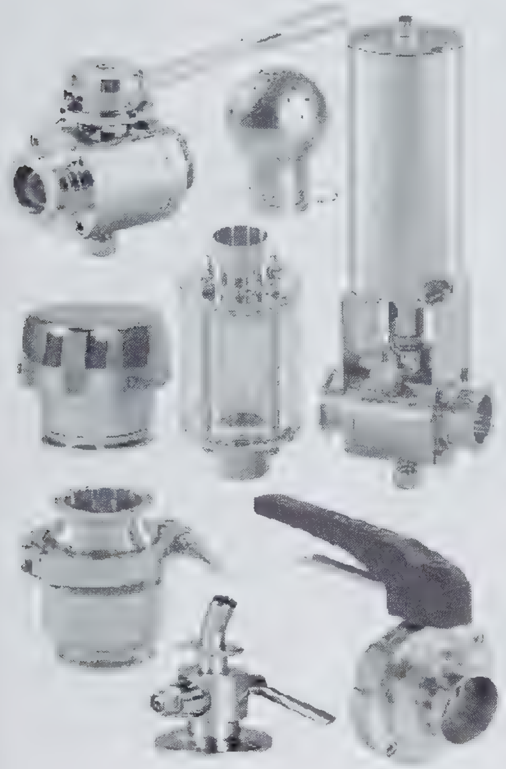
All Gamajet winery cleaning machines and systems are included in Gamajet's new video presentation. Free copies are available upon request in either CD or DVD formats.

For more information, contact:
Gamajet Cleaning Systems
604 Jeffers Circle, Exton, PA 19341
tel: 877/426-2538; fax: 610/408-9945
e-mail: sales@gamajet.com
website: www.gamajet.com

PLEASE SEE GAMAJET AD, PAGE 38.

CIPRIANI HARRISON VALVES CORP.

Cipriani Harrison Valves Corporation manufactures a large variety of high-quality hygienic-forged stainless steel valves, in 304L and 316L, both manual and actuated.



Cipriani also makes filters in 1-inch to 4-inch. Many valves are AAA-approved, and third-party verified. Cipriani is ISO-certified, and its products are fully traceable. MTR's are available on request.

Cipriani can supply products compliant with FDA and USP class-6. BPE and low-ferrite products are also available. To receive a catalog, call or visit the Cipriani website.

For more information, contact:
Cipriani Harrison Valves Corp.
30271 Tomas St.
Rancho Santa Margarita, CA 92688
tel: 949/589-3978; fax: 949/589-3979
e-mail: cipriani@ciprianicorp.com
website: www. ciprianicorp.com

PLEASE SEE CIPRIANI HARRISON AD, PAGE 74.

KEMPER REFRIGERATION

Since 1979, customer satisfaction has been Kemper Refrigeration's number-one priority. Kemper conducts on-site examinations of customer refrigeration requirements, allowing them to design, build, and install a quality refrigeration system. Comprehensive proposals are provided on all jobs to ensure systems are implemented in the most cost-effective way possible, without sacrificing quality. Kemper has many years of experience hand-selecting vendors and matching them to the needs of customers.

Kemper Refrigeration is capable, committed and competitive, always available to answer customer concerns and questions. All systems meet strict guidelines as required by current codes and RMP/PSM documents.

Kemper's Parts Department is staffed with highly-trained personnel who can provide parts and technical information for virtually all brands of refrigeration products. Specializing in compressor parts, and both new and reconditioned compressor packages.

Kemper's service department is staffed with experienced, certified technicians who can provide:

- Preventive Maintenance
- System Evaluation and Analysis
- Screw, Rotary, and Reciprocating Compressor Repair and Rebuilding
- Startups, Shutdowns, and Tie-ins
- Audits: Safety, Mechanical, and Engineering
- Vibration Analysis

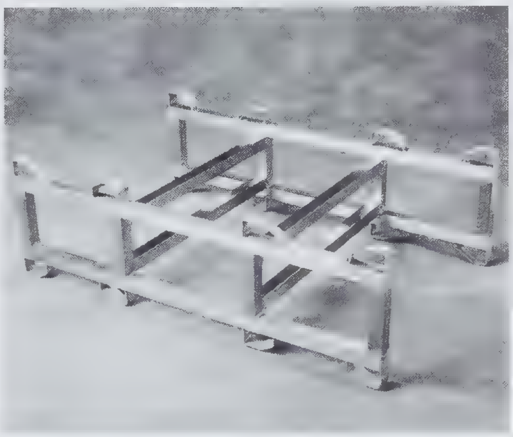
For more information, contact:
Kemper Refrigeration
#1 Wine Master Way, Lodi, CA 95240
tel: 800/549-7894; fax: 209/339-9354
Watsonville, CA
tel: 800/549-7472; fax: 831/722-6721
Wilder, ID
tel: 800/549-8529; fax: 208/482-7790

PLEASE SEE KEMPER REFRIGERATION AD, PAGE 114.

G.W. KENT, INC.

G.W. Kent has supplied wineries, breweries, and beverage industries since 1985. The company has a catalog and an online store with a full line of winery equipment and supply needs, including:

- destemming, crushing, and sorting equipment;
- refractometers and other testing instruments;
- bins;
- presses;
- tanks;
- valves;
- fittings;
- filters;
- pumps;
- gauges;
- corkers and fillers;
- corks;
- capsuling and labeling machines; and more!



G.W. Kent stainless steel barrel racks have replaced many rusty metal barrel racks in wineries all over the U.S. In addition to offering racks that outshine the competition, G.W. Kent offers competitive prices and quick delivery from stock, or custom production. By reducing winery labor and maintenance costs, stainless steel racks are an investment that pays for itself in less than three years.

Shop for racks and much more. Order a catalog or shop online at gwkent.com.

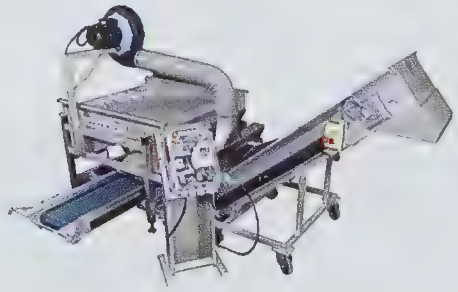
For more information, contact:
G.W. Kent, Inc.
506 S. Huron, Ypsilanti, MI 48197
tel: 800/333-4288, or 734/572-1300
e-mail: info@gwkent.com
website: www.gwkent.com

PLEASE SEE G.W. KENT AD, PAGE 34.

SCOTT LABORATORIES, INC.

Continued innovation by Scott Labs and Vaucher-Beguet has resulted in increased speed and efficiency of sorting during crush. In 2007, sorting was performed from 2 to 16 tons/hr at 50 wineries in the western U.S. and Ontario, Canada.

The Mistral Line offers a level of selection unparalleled in the industry. Winemakers already using this technology have found that not only has overall must and wine quality improved, but that automation has also led to economic efficiencies in labor and time. Mistral's modular design allows a winemaker to customize the intensity of selection and capacity of production to suit quality and production demands.



The increased practice of sorting has led to greater scrutiny of destemmers and their ability to provide whole berries. The new Armbruster Rotovib has proven to be a significant advance in enhancing berry sorting. Field trials and industrial production have strengthened Armbruster's ability and reputation for providing higher percentages of whole berries to other units processing the same fruit. This allows winemakers to consider berry selection on a wider variety of fruit, including more thin-skinned varietals.

For more information regarding Armbruster and Vaucher-Beguet products and reference, please contact Scott Labs or visit booth 601 at the 2008 Unified Symposium in Sacramento, CA.

For more information, contact:
Scott Laboratories, Inc.
2220 Pine View Way, Petaluma, CA 94954
tel: 707/765-6666; fax: 707/765-6674
e-mail: info@scottlab.com
website: www.scottlab.com

PLEASE SEE SCOTT LABS ADS, PAGES 30,49.

OENODEV USA, INC.

Oenodev offers fresh thinking about wine maturation.

Patrick DuCournau, owner of Oenodev, invented micro-oxygenation (MOx) in the late 1980s in southern France. It is employed commercially for controlling tannin development, increasing color stability, combating reduction and vegetative characteristics, and increasing wine longevity.

[œ]
œnodev

For 15 years, Oenodev has manufactured and installed thousands of micro-oxygenation units worldwide, under the professional guidance of 18 trained enologists. Today, Oenodev is a leader with representatives in Europe, the Americas, and Australia.

Oenodev includes, in all its micro-oxygenation equipment, a high-tech ceramic diffuser, which assures a wide range of continuous flow (from 0.25 ml/l/mo to 200 ml/l/mo for tanks from 25 gallons to 150,000 gallons) and stable back pressure. Measurement of O_2 can be expressed in either ml or mg. Through extensive R&D, Oenodev's equipment is constantly evolving to be a fully integrated part of winery operations.

Many MOx users take advantage of full-service support packages, which provide affordable on-site expertise, needed to assure best results and minimize risk.

Oxygenation is only one aspect of an overall plan for elevage, which is the ongoing focus of Oenodev, who seeks understanding of the structure, age, and color of a wine and its interactions with oxygen, oak, and lees.

Now winemakers can fully control what used to happen by chance, meeting objectives without compromising wine quality.

For more information, contact:
Oenodev USA, Inc.
1260 N. Dutton Ave. #240
Santa Rosa, CA 95401
tel: 707/332-1078; fax: 707/542-6364
e-mail: usa@Oenodev.com
website: www.Oenodev.com

PLEASE SEE OENODEV USA AD, PAGE 47.

FOGMASTER CORPORATION

Fogmaster's Sentinel-5850 barrel-room humidification system brings innovative atomization technology to small- and mid-size wineries. It uses a turbulent-vortex nozzle to atomize water into micro-droplets that evaporate quickly and spread uniformly throughout the barrel room.

The control unit (see photo) monitors relative humidity and regulates water flow. A regenerative blower, designed for efficiency and low-maintenance cost, provides air to atomize water.

When humidity drops below the set point, the control unit activates the system and the nozzle ejects a fog of tiny droplets. The droplets evaporate quickly and raise humidity so barrels stay dry. Because the nozzle has no tiny orifices, nozzle plugging is not an issue.

Designed for "do-it-yourself" installation, the Sentinel-5850 includes all installation components except the two-inch PVC pipe needed to convey air from the blower to the nozzle.

A single nozzle system can maintain a 5,000-sq.ft. barrel room. A cart option is available for user mobility.

For more information, contact:
Fogmaster Corporation
1051 SW 30th Ave.
Deerfield Beach, FL 33442
tel: 954/481-9975; fax: 954/480-8563
e-mail: info@fogmaster.com

PLEASE SEE FOGMASTER CORP. AD, PAGE 83.

KOCH MEMBRANE SYSTEMS

Koch Membrane Systems, Inc. (KMS) introduced hollow fiber crossflow microfiltration (CMF) systems designed specifically for use in wine clarification. The systems employ a new membrane that is sturdier and more productive than other membranes.

With KMS crossflow filtration, a feed stream flows parallel to the membrane surface at high velocity, as compared to the perpendicular flow path employed in conventional depth filtration. By keeping suspended material from settling, crossflow filtration minimizes the build-up of solids on the membrane, delivering a high permeation rate and maintaining stable throughput. CMF can be employed as a one-step process, eliminating the need for multiple diatomaceous earth filtration steps.

KMS systems are flexible, efficient, and gentle on wine due to minimal oxygen pickup and heating. They are available as manual machines, partial, and fully automated systems requiring little or no operator attention.

For more information, contact:

Koch Membrane Systems
850 Main St., Wilmington, MA 01887
tel: 888/677-5624
e-mail: info@kochmembrane.com
website: www.kochmembrane.com

PLEASE SEE KOCH MEMBRANE SYSTEMS AD, PAGE 123.

COLLOPACK SOLUTIONS

ColloPack Solutions provides processing and bottling equipment for the wine industry. Range of products offers solutions for virtually every major step in wine production, from grape receiving to bottling and case packing. Manufacturers that ColloPack represents include:

Diemme — membrane, screw and basket presses; destemmer/crushers; grape sorting and conveyors; plate and frame lees filters.

Bertolaso — integrated bottling lines including low vacuum, gravity and counter pressure fillers; corkers; cappers for ROPP, crown and synthetic closures; bottle cleaners; micro filtration systems; bottle conveyors and line automation.

Robino & Galandrino — capsule dispensers and applicators for PVC, poly, and tin capsules, and wirehood applicators.

Cavagnino & Gatti — rotary wet glue, pressure-sensitive labelers.

Cames — bottle washing; cork orientors.

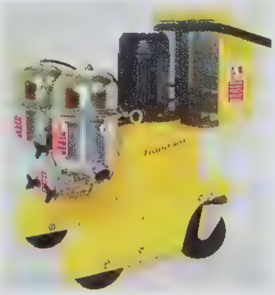
Berchi — bottle and carton depalletizers; carton conveyors and palletizers; case packers.

Perrier — sparkling wine disgorging machinery.

Champagel — sparkling wine freezing of yeast solids.

Francisco Oller — sparkling and still wine agglomerated closures.

Francesca Pump — versatile rotary piston, positive-displacement pump with gentle-flow system; 400–15,000 gallons/hour.



ColloPack provides comprehensive after- sales service and support, including a local inventory of over 5,000 different parts and a team of experienced, trained technicians.

For more information, contact:

ColloPack Solutions, LLC
193 Camino Dorado, Napa, CA 94558
tel: 707/258-3940; fax: 707/258-3949
e-mail: sales@collopack.com

PLEASE SEE COLLOPACK AD, PAGE 17.

SANTA ROSA STAINLESS STEEL

Santa Rosa Stainless Steel (SRSS), one of the world's largest wine tank manufacturers, is in its 40th year of production.

SRSS builds tanks with capacities from one-gallon up to 700,000-gallon field-erected tanks. Each tank is finely crafted and passes through a rigid series of quality control checkpoints before shipment. Tanks are available on short notice from stock or may be custom-built to winery specifications.

Cooling jackets or panels can easily be added to existing tanks. SRSS press dimple jackets are quick to install in the field for retrofits to existing non-jacketed tanks for increased efficiency.

Jobsite retrofitting and tank repair are a large part of SRSS's expertise. In 2001, SRSS released a state-of-the-art, automatic punch-down unit that is installed in the tank and operated by an air cylinder above the tank. The automatic control system is manufactured by Green Controls of Cloverdale, CA. Five units were installed and operating at Carneros Creek Winery for the 2001 crush.

SRSS can design and build tanks for micro-oxygenation. SRSS can also convert existing tanks for micro-oxygenation.

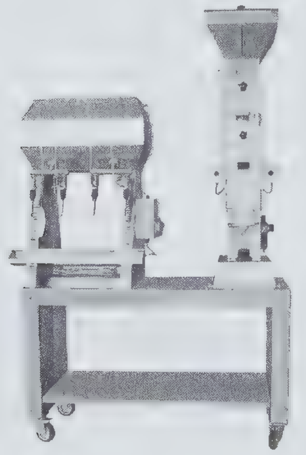
For more information, contact:

Santa Rosa Stainless Steel
1400 Airport Blvd., Santa Rosa, CA 95403
tel: 707/544-7777; fax: 707/544-6316
e-mail: rod@srss.com
website: www.srss.com

PLEASE SEE SRSS AD, PAGE 75.

NAPA FERMENTATION SUPPLIES

Napa Fermentation Supplies offers a full line of winemaking equipment and supplies, including variable capacity stainless steel tanks with adjustable lids from 26 gallons to 2,693 gallons and closed-top tanks from 79 gallons to 5,221 gallons, with or without manway, and with or without cooling.



Also available are: Karcher hot water pressure washers with 1,300 psi to 3,000 psi and temperatures from 86°F to 285°F steam; one-inch and 1.5-inch Jabsco pumps with AC inverter drive; two-inch or three-inch Zambelli must pumps with AC inverter drive; Zambelli crusher/destemmers from two to 14 tons per hour; Zambelli manual and hydraulic, membrane, and bladder presses; eight-inch and 16-inch Zambelli plate filters; a full line of stainless steel fittings and valves, butterfly and ball; one-inch to four-inch wine hose; labware; refractometers; wine thieves; and table-top labelers.

Tivoli corking/filling machine, made of AISI-304 stainless steel, has four jaws for use with synthetic or natural corks (22, 24, or 26mm diameter). The corking pin has a pneumatic piston, inserting rapidly to create less pressure on bottle neck, and the cork hopper has a mechanical agitator for continuous cork feed. The filler has high/low fill sensors, four spouts, comes with or without vacuum, 110 VAC, and will fill 500 to 600 bottles/hour.

For more information, contact:
Napa Fermentation Supplies
575 Third St., Bldg. A, Napa, CA 94559
tel: 707/255-6372; fax: 707/255-6462
website: www.napafermentation.com

PLEASE SEE NAPA FERMENTATION AD, PAGE 30.

JAYBIRD MANUFACTURING, INC.

Jaybird manufactures a commercial line of fine-mist fogging units, perfectly suited for wine storage humidification. With three major product lines to choose from, Jaybird has units to suit any size barrel room. From durable mobile floor units to hanging fan units, Jaybird brings all the advantages of high-tech fogging down to simple stand-alone independent units.

Enormously powerful and attractively priced, Aquafog® humidifying fans do not require high-pressure pumps or massive air supplies for operation. The nozzle-free units connect and operate from ordinary utility supplies and have fully adjustable fogging output capability.

- HRSM™ Compact, powerful, and built like a tank, with pivoting fogging head that can deliver high quality fog anywhere you need it,
- Turbo XE fans™ have all the power with added versatility and minimal investment. Humidifies up to 40,000 cu. ft.,
- Aquafog® 400™ brings advanced fine-mist fogging to the small winery, with quiet hanging units for areas up to 3,000 cu. ft.

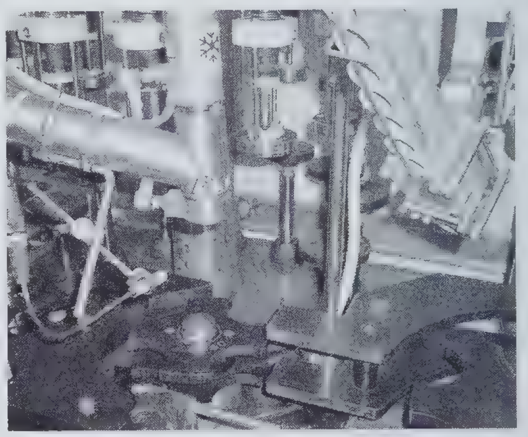
Discover the practical way to humidify your barrel rooms with Aquafog®, the industry leader in centrifugal atomizers for over 19 years. Made in U.S.A.

For more information, contact:
Jaybird Manufacturing, Inc.
2595-B Clyde Ave., State College, PA 16801
tel: 888/889-4407; fax: 814/235-1827
e-mail: info@jaybird-mfg.com
website: www.jaybird-mfg.com

PLEASE SEE JAYBIRD MFG. AD, PAGE 87.

CRYOTECH INTERNATIONAL

Cryotech International, a leader in liquid nitrogen delivery systems for container pressurization and/or oxygen displacement, can help wineries reduce headspace oxygen and extend shelf-life in screw cap packages while maintaining taste.



More and more winemakers are making the switch to screw caps to preserve the fresh fruit taste of their wines and to reduce the bottling cost. With this change comes concern over the additional headspace that would normally be displaced by a cork. The headspace can become a holding area for excess oxygen and cause oxidation of the wine.

Many winemakers have discovered that adding liquid nitrogen dosing to their bottling operation is a cost-effective way to eliminate the excess oxygen and maintain the taste of the wine.

Cryotech has a complete line of liquid nitrogen dosing equipment to automate and control the introduction of LN_2. A very small dose of LN_2 is injected into the filled bottle. One part of liquid nitrogen warms and turns into 700 parts of gas, displacing O_2 from the headspace.

After installing a Cryotech injection system, one customer reported dissolved oxygen content of less than 0.03 ppm without compromising the fresh fruit taste of the wine.

For more information, contact:
Cryotech International
745-B Camden Ave., Campbell, CA 95008
tel: 408/371-3303; fax: 408/371-3303
e-mail: salesinquiry@cryotechinternational.com
website: www.cryotechinternational.com

PLEASE SEE CRYOTECH AD, PAGE 7.

AAQUATOOLS

AaquaTools has been providing water-driven cleaning tools to wineries for more than 20 years. AaquaTool's success is a result of the ability to fill sanitation voids with high-pressure, low-flow, specialty cleaning tools that clean quickly with minimal amounts of water.

AaquaTools, Inc.
wine supply and sanitation

New in 2008 is the American Canyon sales and service center. You will find products and parts from suppliers like KEW, Remco, Kan-A-Flex, Cipriani, OzoTech, Noritz, Pacific Coast Chemical Co., and stainless sanitary fittings and safety equipment.

AaquaTools' AaquaBlaster series of self-propelled cleaning tools are used to wash barrels or tanks. Robust and reliable, the AaquaBlaster successfully cleans with hot water (up to 185°F) and high impingement.

AaquaTools HotCart portable propane-fired hot water generator/high pressure washer provides hot water (up to 180°F) for domestic or high-pressure applications. Fired by clean-burning, energy-efficient, "tankless technology" and, coupled with a KEW Poseidon pump and motor assembly, HotCart outperforms dirty, odorous, diesel-fired pressure washers.

The KEW Poseidon is a perfect driver for all water-driven tools. Designed as a cold water electric-pressure washer, the Poseidon receives hot water (up to 185°F) while delivering up to 2,750 psi @ 5.5 gpm.

AaquaTools offers ozone and steam generators, water-driven floor cleaning attachments, and many more effective cleaning tools.

For more information, contact:
AaquaTools, Inc.
Napa: 4100 Paoli Loop "A"
American Canyon, CA 94589
tel: 707/558-9100; fax: 707/558-9108
Sacramento: 3233 Fitzgerald Rd. "B"
Rancho Cordova, CA 95742
toll free: 800/777-2922; fax: 916/635-8856
e-mail: info@AaquaTools.com
website: www.AaquaTools.com

PLEASE SEE AAQUATOOLS AD, PAGE 87.

FLEXTANK, INC.

Oak wine barrels are one of the few pre-industrial revolution items still in regular use and essentially unchanged for centuries. They perform three fundamental functions in the maturation of wine — containment, flavor addition, and oxygen permeability, which facilitates complex changes during the aging of high-quality wine.

Flextank's patent-pending maturation vessels provide all of these functions with more winemaker control, in a hygienic and long-lasting vessel made from food-grade polyethylene. Vessels are available from 50 to 600 gallons that behave like a second-year barrel in terms of oxygen permeability.

300-gallon stackable maturation vessels produced in Washington.

Consistency of performance between vessels, and the availability of a wide range of oak adjuncts in the form of staves, chips, spirals, blocks etc., allows a winemaker a veritable smorgasbord of opportunity to experiment with flavor in a reproducible environment.

Used in Australia since the 2004 vintage, Flextank vessels are producing trophy-winning wines, including the top Pinot Noir at the prestigious 2006 Royal Melbourne Wine Show. The success is attributed to retention of volatile flavor compounds lost from barrels, and much-improved hygiene. In addition to improving quality, the vessels offer compelling cost advantages when compared with traditional barrels.

For more information, contact:
Flextank, Inc.
1200 Knob Creek Dr., Athens, GA, 30606
tel: 706/316-1622; fax: 706/534-8704
e-mail: john@flextank.biz
website: www.flextank.biz

PLEASE SEE FLEXTANK AD, PAGE 76.

WESTERN SQUARE INDUSTRIES

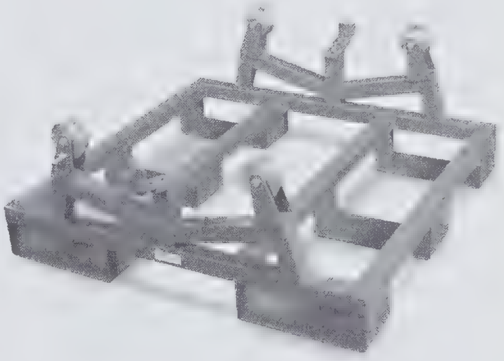
Western Square's traditional portable barrel racks are powder-coated with a patented baked enamel which is the most durable finish available, and is resistant to chipping, abrasion, impact, corrosion, and chemicals.

The racks are manufactured in a variety of configurations: the Double Bar Rack, Four-Barrel Rack, and Low Profile Rack are all available with removable center-cradles.

Western Square also manufactures the Cave Rack System, which comes in two-, three- and four-barrel sizes. These racks can be connected by a locking bar for a continuous length of racks.

The Barrel Master, barrel rack-on-rack system was introduced two years ago, and comes with wheels or a traditional cradle. The system can stack up to eight high.

Western Square is the sole distributor of the Stokes Winery Ladder, with its many safety and stabilizing features such as front and back ladders, locking casters, and reinforced cat walk.



New for 2008 is the Rotary (360°) Fermentor Rack for 300 to 600-liter barrels that allows for a manhole on the bilge or the barrel head.

For more information, contact:
Western Square Industries
Trygve Mikkelsen
1621 N. Broadway, Stockton, CA 95205
tel: 209/944-0921; toll-free: 800/367-8383
website: www.westernsquare.com

PLEASE SEE WESTERN SQUARE AD, PAGE 109.

EURO-MACHINES, INC.

Scharfenberger, a leading German manufacturer of membrane presses and grape processing facilities, presents the new Europress-Cool with a cooling jacket. Europress-Cool will cool the grapes and maintain the temperature throughout a pressing cycle. Europress-Cool completely eliminates negative temperature influences, even on the hottest harvest day.

Europress-Cool allows winemakers to control the grape temperature. The press drum can be pre-cooled before filling or warmed up when grapes are too cold. In addition, the Europress-Cool can be used for cold maceration, and to slow down biological activity.

65% of the Europress-Cool press drum is equipped with a temperature zone made from laser-welded double jacket (pillow-plate). The pillow-plate can be filled with water, water-cooling agent, or pure cooling agent as required. The cooling liquid then flows in a circulating closed circuit and does not need further replacement. The inlet temperature would be regulated by the customer's cooling system.

Euro-Machines, the U.S. division of Scharfenberger, is committed to excellence in customer service. Warehouses and service vehicles are fully stocked with spare parts so that Euro-Machines' knowledgeable and highly-trained technicians may provide timely and competent service to customers.

For more information, contact:
Euro-Machines, Inc.
4950 Fulton Dr., Ste. E, Cordelia, CA 94534
tel: 707/864-5800; fax: 707/864-5879
e-mail: mattateuro@aol.com
website: www.euromachinesusa.com

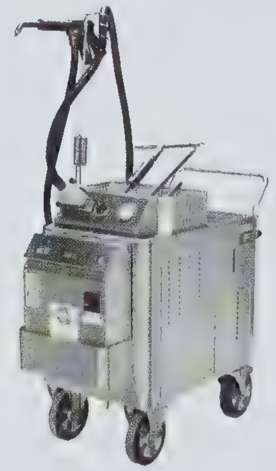
PLEASE SEE EURO-MACHINES ADS, PAGES 12, 33.

TOYOTA MATERIAL HANDLING

Xtreme Steam 19.5kw is a one-step dry steam cleaning and sanitizing system: the AmeriVap superheated dry steam system can be used anywhere. Toyota Material Handling (TMH) works with wineries to find out how to make winery cleaning jobs more efficient and manageable.

AmeriVap Xtreme Steam features:

- super-heated dry steam vapor dissolves contamination — the vacuum removes it and dries the surface instantly;
- less physically demanding on winery staff — no more wiping, mopping or wasted movements from the floor to the pail, to the ringer;
- cuts cleaning time in half with hours of coverage before a refill of water is required;
- pure H_2O at 220°F, no chemical residue or cross-contamination. Water is never reused;
- AmeriVap technology eliminates the threat of re-infecting other environments, with continuous vacuum extraction of germs going into a separate containment tank.



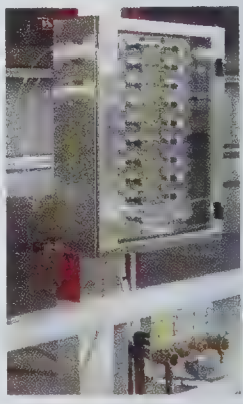
Nothing escapes this natural sanitation process; neither germs nor bacteria can survive in 220°F [105°C] dry steam vapor. With a proven kill ratio of 99.9%, AmeriVap technology is used by many prominent airlines, automobile manufacturers, and corporations in the world today.

For more information, contact:
Toyota Material Handling
Rich Nelson, Industrial Cleaning Specialist
tel: 916/439-4735
e-mail: rnelson@tmhnc.com
website: www.tmhnc.com

PLEASE SEE TOYOTA AD, PAGE 40.

WESTEC TANK & EQUIPMENT

Westec Tank & Equipment has 25 years of industry-leading technology and experience providing custom tanks, catwalks, and equipment for the wine and beverage industries. For a large wine consortium or a small, boutique startup winery, Westec offers one-on-one expertise and insight from helpful, knowledgeable, and experienced professionals.



Westec is on the forefront of the newest styles and designs. The equipment is as technologically-advanced, well-built, easy-to-maintain, safe, and aesthetically-appealing as possible. For wineries needing design advice and guidance, Westec can help plan winery enhancement and expansion projects.

THE BELLI CORPORATION
WESTEC
TANK & EQUIPMENT, CO.

Westec's "OxBox" lets winemakers control the micro-oxygenation process. The OxBox technology can enhance wines without oak barrels, a cost-cutting opportunity.

- Standard 4-channel and 8-channel units (optional stainless steel mounting brackets);
- Custom units designed to meet winery needs;
- Installation and service.

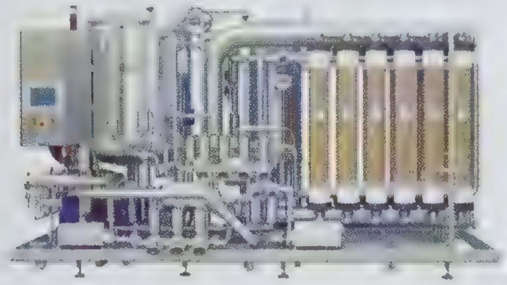
Contact Westec today for more information, a tour of the manufacturing facility, and an estimate for your winery's next job.

For more information, contact:
Westec Tank & Equipment
Joe Belli, Jim Belli, Mark McDowell
1402 Grove St., Healdsburg, CA 95448
tel: 707/431-9342; fax: 707/431-8809
e-mail: info@westectank.com
website: www.westectank.com

PLEASE SEE WESTEC TANK AD, PAGE 73.

PALL CORPORATION

The OenoFlow™ Wine Clarification system has become a benchmark for removal of undesired particulate and microorganisms while maintaining the maximum respect for wine quality and characteristics. The hollow-fiber system enables wineries to clarify their wines in a single-step process without the need for filter aids and/or centrifuges.



Wineries can maintain high flow rates for maximum yield, while also reducing the costs associated with traditional technologies and subsequent filtration steps. Whether the system is used directly after fermentation or after cold stabilization, or prior to bottling, the OenoFlow technology helps wineries set new standards in achieving brand quality, yield, and efficiency.

The OenoFlow XL series is the newest generation of Pall OenoFlow systems. The XL system is equipped with unique, high surface-area modules utilizing proven symmetric PVDF membranes. This modern system allows for higher throughputs in a more compact, cost-effective package. Depending on their specific needs, wineries can choose from three models: the OenoFlow XL C, the OenoFlow XL S, and the OenoFlow XL A.

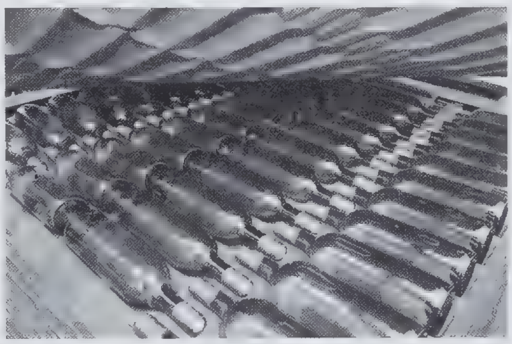
For more information, contact:
Pall Corporation
Nicole Madrid, General Sales Manager
2200 Northern Blvd., East Hills, NY 11548
tel: 516/801-9137
e-mail: foodandbeverage@pall.com
website: www.pall.com/foodandbev

PLEASE SEE PALL CORP. AD, PAGE 69.

SPEC TRELLISING

Cella-Stac is a palletized, modular system for storing bottled wine. Cella-Stac is comprised of layers of thermoformed, food-grade plastic sheets, between which finished bottles of wine are safely stored. Cella-Stac 48CS accommodates 48 bottles per layer and works with most bottle types. Alternative sizes will be available in the near future.

Because of the individual bottle cavities, there is no bottle-to-bottle contact, so breakage is less than with traditional bottle storage techniques, with good airflow between bottles. As each tray is filled, a new layer is placed on top, until the pallet is complete.



Cella-Stac CS48 can safely contain up to 14 layers (672 bottles) and stacked up to three pallets (2,016 bottles) high. Cella-Stac has a life expectancy of up to 15 years.

Cella-Stac offers wineries a long list of convenience, logistical, and safety benefits including:

- Occupational health and safety benefits;
- Reduced handling costs;
- Reduced BVS closure damage and bottle scuffing;
- Improved inventory control;
- Greater use of warehouse space.

For more information, contact:
Spec Trellising
39 Indian Drive, Ivyland, PA 18974
tel: 800/237-4594; 215/322-5588
fax: 215/357-3122
e-mail: info@spectrellising.com
website: www.spectrellising.com

PLEASE SEE SPEC TRELLISING AD, PAGE 64.

ST. PATRICK'S OF TEXAS

St. Patrick's supplies equipment for small to mid-size wineries from three warehouses covering 35,000 square feet in Austin, TX. Product descriptions and pricing are available online at www.stpats.com. Equipment manuals are also available online.

St.Patrick's of Texas

St. Patrick's of Texas stocks the following equipment:

- NIKO pneumatic membrane presses,
- MEP semi-automatic corkers,
- MEP semi-automatic labelers,
- Wine tanks
- EnoItalia crusher/destemmers,
- Sanitary valves and fittings,
- Barrel tools,
- Filling machines,
- Plate and frame filters,
- Membrane filters,
- Wine and must pumps,
- Heat-shrink and foil applicators.

For more information, contact:
St. Patrick's of Texas
1828 Fleischer Dr., Austin, TX 78728
tel: 512/989-9727; fax: 512/989-8982
e-mail: stpats@bga.com
website: www.stpats.com

PLEASE SEE ST. PATRICK'S AD, PAGE 36.

RLS EQUIPMENT CO., INC.

RLS Equipment Company has provided wineries with quality equipment and service for more than 40 years. As agent for Kiesel, Amos, Strassburger, and Magitec, RLS can supply complete crushing and pressing facilities.

RLS

Kiesel progressive-cavity pumps are available in both hopper and in-line styles from 1,000 liters per hour to more than 200+ tons per hour (tph). The unique Kiesel "corrugated" tube-in-tube heat exchangers can process from hundreds to thousands of gallons per hour, and save $$$ in energy costs.

RLS offers the Amos Engineering, new model ADM921 destemmer-crusher, with all the performance and features of the original A-series, plus updated design and manufacturing — a proven machine with outstanding results.

Strassburger's MCC Crossflow Filtration system is a completely PLC-controlled unit that allows highly flexible control, and the unique design yields one of the lowest recirculation rates (less pumping of wine). Strassburger also offers high-quality plate/frame, and lees filters. S/S construction with either S/S or noryl plates are durable and easy to clean. A wide variety of filter pads is available.

Magitec destemmer/crushers are available from 2.5 tph to 60+tph capacity with Magitec's unique square-hole basket. Magitec offers a variable-speed, dual-drive system (basket/beater bar) on small units, and split machines with vibrator sorting tables between destemming and crushing.

RLS offers domestically-produced OEM-material, replacement membranes for most presses, and an extensive used equipment listing.

For more information, contact:
RLS Equipment Co., Inc.
1017 White Horse Pike
Egg Harbor, NJ 08215
tel: 609/965-0074 or
West Coast tel: 800/527-0197
fax: 609/965-2509
e-mail: rls.equip@att.net
website: www.rlsequipment.com

PLEASE SEE RLS EQUIPMENT AD, PAGE 105.

SKOLNIK INDUSTRIES, INC.

Skolnik stainless steel cooperage is designed to meet the special needs of winemakers in all stages of fermentation, maturation, and storage of fine wines. Skolnik has a long and proud tradition of providing leading winemakers with stainless steel drums of high quality, durability, and design.

Skolnik's wine industry customers look to stainless steel cooperage to supplement oak barrels in key stages of the winemaking process. Stainless steel offers unique and unsurpassed qualities for preserving product integrity and purity — important considerations for why stainless is a key tool for winemakers.

Stainless steel cooperage is:

- Versatile and adaptable to many uses,
- Ready for use after being sterilized,
- Cost-effective and long-lasting,
- Predictable, reusable, and easy-to-clean,
- Virtually maintenance-free,
- Available in sizes from 5 to 55 gallons.

SKOLNIK INDUSTRIES, INC.
MANUFACTURERS OF STAINLESS STEEL BARRELS

Skolnik is a full-service manufacturer of steel containers and accessories. Every Skolnik container is thicker, heavier, and stronger than industry standards — a commitment made to customers for more than 75 years.

For more information, contact:
Skolnik Industries, Inc.
Jason Snow
4900 S Kilbourn Ave., Chicago, IL 60632
tel: 773/362-1913; fax: 773/735-7257
e-mail: jason@skolnik.com
website: www.skolnik.com

PLEASE SEE SKOLNIK INDUSTRIES AD, PAGE 61.

PULSAIR SYSTEMS, INC.

Pulsair is an innovative company that has brought a new technology to winemaking called Pneumatage. Pneumatage is changing the way people think about drinking wine, buying wine, and storing wine. Pneumatage improves the bottom tine, making better quality, early-drinking wine faster than other methods. Moreover, Pneumatage can be automated. It takes over where other systems are just starting.

Pneumatage automates the fermentation cycle, leaving the winemaker to test, examine, evaluate, and taste the wine during fermentation and not worry about the daily chores of turnovers, labor management, and paperwork. When the wine is finished, the data can be downloaded for future use.

Pulsair™
SYSTEMS, INC.

The Pulsair hand-held PTM-2002W allows small wineries to turn the cap from the top or through the racking port. The portable Wine Cart expands the ability of the PTM to mix larger tanks in a semi-automatic mode. Pneumatage-Light allows programming of a fermentation cycle. The fully programmable Pneumatage System will turn multiple tanks on a predetermined time schedule for 14 days. More than 100 tanks can be operated from one central controller. When fermentation is completed, any Pulsair system can be used to quickly mix and blend to create a great Estate Vintage.

For more information, contact:
Pulsair Systems, Inc.
tel: 425/455-1263; toll free: 800/582-7797
e-mail: sales@pulsair.com

PLEASE SEE PULSAIR SYSTEMS AD, PAGE 61.

SANITARY STAINLESS WELDING, INC.

Sanitary Stainless Welding, Inc. manufactures custom fabricated storage and fermentation tanks for the wine industry. Tank sizes offered range from 250 gallons to 700,000 gallons.

Options include, but are not limited to:

- dimple jackets;
- channeled jackets;
- manways of various sizes;
- sample and racking ports;
- a variety of fittings and valves.

Tanks are offered with sloped or conical bottoms and sit on either metal or concrete bases. Tank Tops include off-center, truncated or centered, conical tops.

Sanitary Stainless Welding, Inc. offers custom-design catwalks in either stainless steel or aluminum. The company also offers "tube in tube" heat exchangers, grape receiving hoppers, screw conveyors, tubing line installation, crusher repairs, press repairs, tank modification, and tank repairs.

Sanitary Stainless Welding, Inc. was founded in the original Valley Foundry facility in 2004, to be a premier tank construction solution.

For more information, contact:
Sanitary Stainless Welding, Inc.
2550 S. East Ave., Ste. 101-B
Fresno, CA 93706
tel: 559/233-7116; fax: 559/233-7172
e-mail: jimm@sanitarystainless.com

PLEASE SEE SANITARY STAINLESS AD, PAGE 41.

AMERICAN TARTARIC PRODUCTS, INC.

For years, winemakers have added oxygen to wine — it has only been in the last decade that specific tools for this task became available. Parsec has revolutionized micro-oxygenation technology by offering the only system that supplies oxygen by weight instead of volume.

When releasing a potentially dangerous gas like oxygen in a wine tank, you have to be absolutely sure that the quantity you release is precise, in order to allow you to repeat it. You can find a wide range of equipment that measures oxygen dose by volume (ml). A liter of gas can be a very small quantity (at low pressure and high temperature) or very large quantity (at high pressure and low temperature). If you want to measure gas by liter, you have to refer to a specific pressure and a specific temperature.

Usually, micro-oxygenation equipment is fed by a gas cylinder, and the pressure-reduction gears are not able to provide a precise pressure value. Parsec systems have taken this into account by measuring the weight of the oxygen molecule, temperature, and pressure to the micro-second with no calibrating, assuring the most accurate system available today. Systems are available from one to 120 units and are PC-compatible.

For more information, contact:
American Tartaric Products, Inc.
1230 Shiloh Rd., Windsor, CA 95492
tel: 707/836-6840; fax: 707/836-6843
e-mail: atp@americantartaric.com
website: www.americantartaric.com

PLEASE SEE AMERICAN TARTARIC AD, PAGE 24.

KLR MACHINES, INC.

BUCHER is a world leader in both the wine and fruit processing market, maintaining 50% of the world market share for the wine industry (reception and pressing).

KLR Machines, Inc.
a **BUCHER** company

Bucher Vaslin continually monitors and analyzes the wine market to respond to the needs of the wine industry through new technologies and innovation. KLR Machines' complete line of Bucher Vaslin equipment is developed by expert factory technicians, designed to work in-line from grape reception through processing. Various capacities accommodate small, medium, and large wineries.

New for 2008 is the Bucher Vaslin InertyS® inert gas press (22-HL capacity and larger), which protects 100% of pressed juice from oxidation. The Delta destemmer range has been redesigned, with features including a variable frequency drive to provide greater fine-tuning required by vintage variation.

KLR Machines is also proud to announce distribution partners, Pacific Winemaking (Pacific Northwest), and Carolina Wine Supply (southeastern U.S.). Both partners can be contacted through klrmachines.com, or call 707/823-2883.

For more information, contact:
KLR Machines, Inc.
350 Morris St., Ste. E, Sebastopol, CA 94572
tel: 707/823-2883: fax; 707/823-6954
website: www.klrmachines.com

PLEASE SEE KLR MACHINES AD, PAGE 26.

PRO REFRIGERATION INC.

Pro Refrigeration is a leading manufacturer and supplier of refrigeration equipment to the winery and brewing industries.

The Pro-mission is to build the highest quality, most efficient chiller systems for the winery market. This requires constant product development, combining the latest technology with proven design and engineering.

Recent developments include:

1) Implementation of Electronic Expansion Valves and development of the ER110, EV Control Card;
2) Continued improvement of the CR110 microprocessor controller, providing smoother and more efficient system operation;
3) Touch screen microprocessor interface for easier set-up, programming, and monitoring;
4) Upgrade from formed metal frames to heavy-duty welded framework;
5) Variable frequency drives for glycol pump and compressor control, decreasing power consumption and compressor cycling;

Much more than a manufacturer of equipment for large wineries, the Pro-focus has also remained on the proven MA Chiller Series, which ranges from 3 HP up to 24 HP.

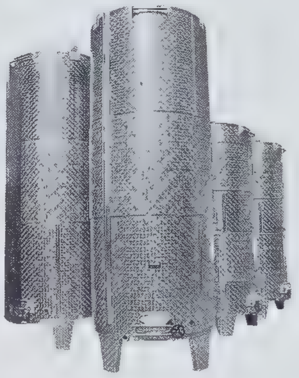
Over the past 17 years, Pro has worked with some of the finest winemakers to develop a product line specifically for the winemaking craft.

For more information, contact:
Pro Refrigeration Inc.
326 8th St. SW, Auburn, WA 98001
tel: 253/735-9466; toll-free: 800/845-7781
fax: 253/735-2631
e-mail: info@prorefrigeration.com
website: www.prochiller.com

PLEASE SEE PRO REFRIGERATION AD, PAGE 60.

RAYNOX 2000, INC.

Raynox 2000, Inc. is a fast-growing manufacturer of high-quality stainless steel tanks and equipment for the wine industry.



Raynox offers designs to suit different applications: variable capacity, closed-top tanks with or without cooling jackets, rectangular tanks to maximize space, combined tanks (double or triple). Raynox supplies the best quality at competitive prices. Raynox tanks are made to customer's specifications and built with high standards of welding and polishing.

Raynox has developed winemaking equipment: plate and frame filters, cartridge filter housings, pneumatic membrane presses, conveyor-press, must pumps. and carries a wide range of accessories such as valves, fittings, and adapters.

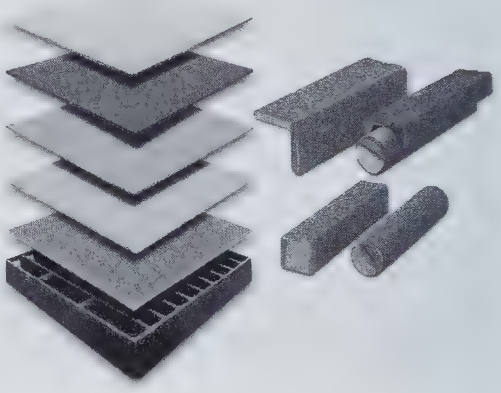
Raynox sells throughout the midwest and east coast of the U.S. and in Canada in the Niagara region and southern area of Ontario, in the province of Quebec, and British Columbia.

For more information, contact:
Raynox 2000 Inc.
Sales Department
1148 St. Michel Street, St-Cesaire
Quebec, Canada J0L 1T0
tel: 866/469-4181 (toll free)
fax: 450/469-2112
e-mail: raynox@raynoxinc.com
website: www.raynoxinc.com

SLIPNOT

*Slip*NOT® Metal Safety Flooring manufactures slip-resistant stainless steel products that are NSF-approved for use in wineries. Catwalks, stair treads, and ladder rungs, are only a few of the areas where *Slip*NOT® non-slip products will help prevent slip and fall accidents among winery workers and tourists.

Used in various industries such as manufacturing, automotive, utility, municipal, transportation and the military; *Slip*NOT® non-slip products are ideal for the wet and slippery areas in wineries.



The grit-free *Slip*NOT® surface is bonded to the plate at over 4,000 psi. It will not rub off and will never affect the end product.

*Slip*NOT® stainless steel products are available in floor plate, grate, ladder rungs/covers, expanded metal, perforated plate and stair treads/covers.

*Slip*NOT® slip-resistant products are the one-time answer for safety.

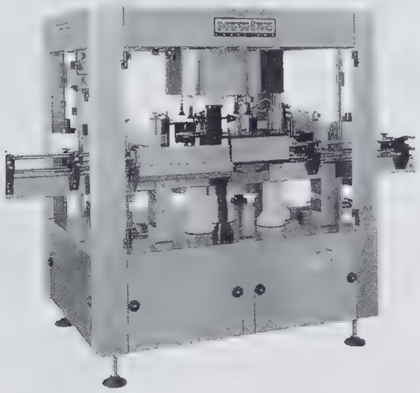
For more information, contact:
SlipNOT Metal Safety Flooring
2545 Beaufait St., Detroit, MI 48207
tel: 313/923-0400; 800-754-7668
fax: 313/923-4555
website: www.slipnot.com

CRIVELLER COMPANY

Criveller Company has supplied the wine and beverage industries for over 25 years.

Criveller's Windsor, CA, office expedites customer service to wineries in California, Oregon, and surrounding western states.

Criveller carries a wide variety of processing equipment for every winemaking phase and fabricates stainless steel tanks to customer specifications. Red wine fermentors with a mobile plunger are available.



In conjunction with leading manufacturers of bottling and labeling equipment, Criveller offers manual, semi-automatic, or fully automatic bottling lines, including cost-effective monoblocs and triblocs that cater to all bottling needs

Criveller's warehouses in Niagara Falls, Canada, and Windsor, CA, stock various models of bottling equipment, filters, destemmer/crushers, presses, and stainless steel tanks, including variable capacity and mini-tanks, for customer inspection.

For more information, contact:
Criveller Company
West Coast: Criveller California Corp.
Bruno Criveller or **Brenda Hartley**
10350 Old Redwood Hwy.
Windsor, CA 95472
tel: 707/838-2222; fax: 707/838-2242
e-mail: crivca@sonic.net
Canada
Bruno or **Mario Criveller**
6935 Oakwood Dr.
Niagara Falls, ONT. L2E 6S5
tel: 905/357-2930; fax: 905/374-2930
e-mail: info@criveller.com
East Coast
PO Box 202, 1623 Military Rd.
Niagara Falls, NY 14304
tel: 905/358-5202

PLEASE SEE CRIVELLER COMPANY AD, PAGE 107.

VINOVATION, INC.

Vinovation's second generation has arrived. Vinovation started as the industry's first developer of advanced technologies, techniques, and processes for making wine better, cheaper, and easier. With 15 years of dedicated R&D and process development, Vinovation's cutting edge is now mainstream, with the most reliable and experienced wine technology services and equipment.

Vinovation offers multiple services that integrate seamlessly into the client's own winemaking system, including MemstarAA, the only mobile alcohol adjustment filtration system designed to operate in a client's cellar.

Mobile services deploy quickly and easily on-site to do alcohol adjustment, VA reduction, 4 EP/4 EG removal, and ultra-filtration for recovery of press fractions and phenolic concentration. The highest priority of Vinovation's experienced operators is protection and optimization of the client's wine.

Vinovation, Inc.
New tools for an ancient craft...
www.vinovation.com

At its facility, Vinovation offers these same services and more in a newly renovated environment with the best quality control. Vinovation's updated facilities offer state-of-the-art custom crush, winemaking, bottling, and storage.

Vinovation is a sales and service provider for reverse osmosis, alcohol adjustment, ultrafiltration, distillation systems, GE membranes, Cat pumps, and more OEM equipment. They offer high-proof alcohol and XPRESS tannin concentrate and the fermentation extraction-aid produced from press wine known as CoFactor Concentrate.

For more information, contact:
Vinovation, Inc.
1446 Industrial Ave, Sebastopol, CA 95472
tel: 707/824-7900; fax: 707/824-7905
website: www.vinovation.com

ELECTRO-STEAM GENERATOR CORP.

Electro-Steam Generator Corp. has manufactured all-electric steam generators since 1952.

The generators operate at 98% efficiency and produce culinary-grade steam. They are designed for point-of-use placement or with portable mounting. Some of the many uses include: sterilization of bottling lines, melting tartrates, barrel maintenance, and general cleaning.

Electro Steam

Water use is drastically reduced to a few gallons per hour, not per minute.

Because there is no flame, Electro-Steam generators are safe to operate, resulting in lower insurance costs.

Basic maintenance will extend the life of an Electro-Steam unit by many years.

Each generator is hand-built to meet your requirements. The units are manufactured under the ASME Code, are National Board of PVI Shop-Inspected, and UL. CSA certification is provided upon request.

For more information, contact:
Electro-Steam Generator Corp.
PO Box 438, Rancocas, NJ 08073
tel: 866/617-0764; fax: 866/617-0765
e-mail: jharlin@electrosteam.com
website: www.electrosteam.com

PLEASE SEE ELECTRO-STEAM AD, PAGE 37.

SILVER STATE STAINLESS, INC.

Silver State Stainless manufactures custom stainless steel tanks using high-quality fabrication services and craftsmanship, combined with high customer value and on-time delivery.

SILVER STATE STAINLESS

Silver State Stainless offers these features and options on their tanks:

- Choice of metals: 304 or 316;
- Various heating and cooling options;
- Custom configurations;
- Process piping and agitation units;
- Easy-to-use and versatile, variable capacity tanks;
- EPDM gasketing system with a softer, more pliable durometer for easy sealing and removal;
- Universal clamping system on removable-top tanks, allowing the lid to be applied from any position in a 360-degree radius;
- 110-volt electrical cable winch arm and boom for easy top-access;
- Polished integrated leg system with adjustable foot pads;
- Lower tank bracing and cross members (¼-inch thick), for structural soundness and easy repositioning.

Silver State Stainless has incorporated the latest technology in automated resistance welding, and designs and manufactures tanks to exact engineered specifications. Heating and cooling jackets have been pressure-tested to 600 PSI, with a working pressure of up to 250 PSI.

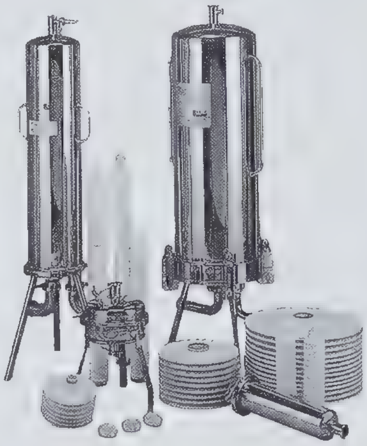
For more information, contact:

Silver State Stainless, Inc.
12 Industrial Pkwy., Ste. E1
Moundhouse, NV 89706
tel: 775/246-1180; fax: 775/246-1183
e-mail: sales@silverstatestainless.com
www.silverstatestainless.com

CUNO INCORPORATED

CUNO is a world leader in the design and manufacturing of a comprehensive line of filtration products and systems for the clarification and final filtration of fine wines.

Innovative CUNO products for wine filtration include the first dual-zone clarification depth filter cartridge (Zeta Plus Maximizer), the first integral multi-zoned membrane prefilter (LifeASSURE®) and the first nylon-based final membrane filter optimized for repetitive hot water exposure (BevASSURE®).



CUNO has recently added to this impressive list the BevASSURE PES line of final membrane filters. BevASSURE PES, a new, polyethersulfone membrane final filter that combines three innovative technologies from CUNO to drastically improve filter throughput and drive down operating costs. A highly asymmetric microporous membrane, a patented pleating design, and a novel, patent-pending support layer construction, work in concert to deliver ultra-fast flow rates, secure spoilage organism retention, and remarkable throughput.

With over 90 years of experience and manufacturing facilities on five continents, CUNO is uniquely suited to provide solutions to wineries worldwide.

For more information, contact:

CUNO Incorporated
a 3M company
400 Research Pkwy, Meriden, CT 06450
tel: 800/243-6894; fax 203/630-4530
e-mail: cjohara@mmm.com
website: www.cuno.com

ARS/PRESSURE WASHER COMPANY

Clean, sanitize, sterilize, and humidify — that's what ARS is all about. ARS can clean, sanitize, and even sterilize bottling lines, tanks, barrels, floors, walls, and piping. ARS can keep barrel rooms dry but humid to reduce evaporative losses, and avoid alcohol concentration.

PRESSURE WASHER COMPANY
ARS We work well under pressure.

ARS technology is rooted in the manufacture of steam sterilizers sold nationwide to hospitals, pharmaceutical companies, and microbiology laboratories. Over 10 years ago, ARS began helping wineries adopt these systems for clean-in-place (CIP) or sanitize-in-place (SIP). ARS is a North American leader in CIP and SIP options for wineries.

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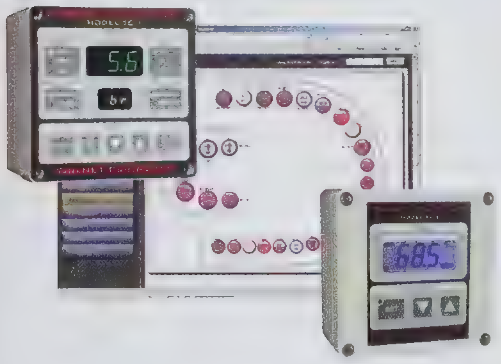
website: www.cleanwinery.com

PLEASE SEE ARS ENTERPRISES AD, PAGE 54.

ACROLON TECHNOLOGIES, INC.

Acrolon, an industry leader in temperature control, introduces two new versions of its TankNET system for 2008.

TankNET® Professional: This all-new version of TankNET offers a redesigned Web interface, enhanced functionality, and new features such as presets, change auditing, tasting notes, and detailed fermentation reports. Also available is a new scheduler for automating pump-overs and initiating other control changes and new communications modules for connecting TankNET to wine-tracking software, industrial PLCs, and energy management systems.



TankNET® Lite is a scaled-down version of TankNET Pro that includes essential functionality for small wineries. This affordable product provides Web-browser monitoring and control of tank thermostats plus data logging, Brix/temp graphing, and e-mail alarms. TankNET Lite requires no network wiring, no Windows® server and no software installation.

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PLEASE SEE ACROLON TECHNOLOGIES AD, PAGE 27.

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PLEASE SEE OGLETREE'S AD, PAGE 67.

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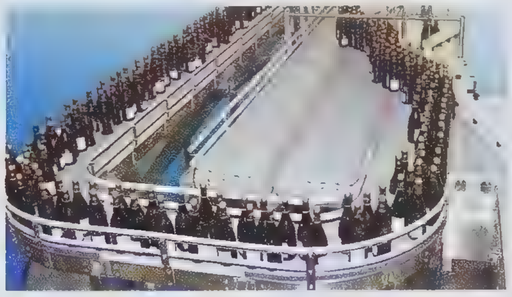

The Garvey Infinity can accumulate reverse-tapered wine bottles, providing valuable reaction time to line malfunctions. It can also incorporate smooth multi-laning for case-packers, and high-speed single filing for labelers. Infinity accumulation tables come with one to five minutes of zero backpressure accumulation keeping the filler running no matter what happens downstream and works equally well for straight-side bottles. Garvey has the solution for any size and speed line for bottlers producing 50+ million down to 10,000 cases/year.

Garvey has helped clients install accumulators into spaces where no other solution would fit; all while increasing productivity as much as 30%.

The Pacific regional sales office can be contacted at 831-818-3429, or tpalandrani@garvey.com; the Australian regional sales office can be contacted at +61 8 8395 0144, or mross@garvey.com.

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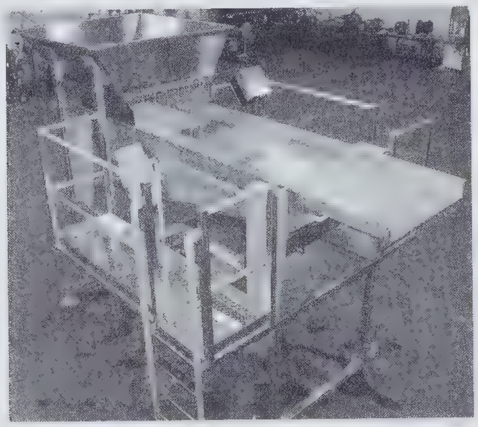
Sierra Manufacturing is a custom engineering and fabrication company, with extensive experience in the wine industry, offering CAD and 3-D layout services, along with turnkey project management. Sierra Manufacturing specializes in integrated grape receiving and distribution systems, ranging from simple manual designs, to fully-automated concepts. Engineered, easy-to-clean features are a standard in all equipment designs.



Systems are built around Sierra's heavy-duty, direct-driven, vibrating receiving and inspection conveyors, including a wide range of interchangeable screening options for removal of MOG. Conveyors are engineered to meter full or half-ton loads in a consistent stream to inspection conveyors, destemmers or presses. User-friendly, variable-speed controls are standard.

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Critical Environment Technologies (CET) manufactures both handheld air quality monitors and fixed systems. Gases detected include CO_2, ammonia, refrigerants, carbon monoxide, SO_2, NO_2, chlorine and many more. CET instruments can be configured to suit any application, from small to large.

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Monitoring fermentation areas or vessels for dangerous concentrations of CO_2 is an essential part of maintaining a safe workplace. Handheld instruments can make air quality monitoring simple, and datalogging capability can create records to prove compliance. Temperature and relative humidity can be measured to optimize the environmental conditions.

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CO_2 exists normally in air at concentrations between 300 and 600 ppm. Exposure to moderately higher concentrations may produce headache, sleepiness or dizziness. Prolonged exposure to high concentrations of CO_2 can be fatal. To protect winery personnel, call CET.

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SUPPLIER GRAPEVINE

Diemme introduces "System Neutral" press option

Diemme, one of the leading manufacturers of wine presses, is introducing their "System Neutral" inert atmosphere pressing option to U.S. wineries. This innovative system earned Diemme a prestigious silver "Palmarés de L' Innovation" award at the 2003 SITEVI exhibition in Bordeaux. Currently in use throughout Italy and France, Portugal, and Argentina, "System Neutral" protects the grapes and juice from oxidative conditions during all phases of the pressing cycle.

Minimizing oxygen contact throughout the white winemaking process is quickly gaining proponents in major European wine producing regions. Reported benefits of pressing white grapes under inert conditions include retention of primary fruit flavors, aromas and bright greenish hues in the finished wine.

"System Neutral" is available on Diemme's complete line of tank presses, from 50 to 430 hectoliters. The automatic and fully programmable option protects the product from atmospheric oxygen during all phases of pressing including filling, pressing, and cake tumbling. Additionally the extracted juice is protected in the juice-collection pan.

Nitrogen, carbon dioxide or both may be used as protective gases. When loading the press, inert gas is used initially to displace atmospheric oxygen in the press tank and subsequently to prevent its reintroduction as pressing proceeds. Inert gas is automatically introduced into the vessel through the axial filling inlet and the injector normally used for Diemme's "Pulse Jet" automatic cleaning system; each juice outlet is also supplied with an automatic valve so that the tank can be completely isolated from the atmosphere.

For more information contact Rick White at ColloPack Solutions in Napa, CA; 707/258-3940.

UC Davis gives Awards of Distinction to Karen Ross / Jerry Lohr

BY John Stumbos

Two influential members of the California wine industry were honored with 2007 Awards of Distinction by the University of California, Davis, College of Agricultural & Environmental Sciences (CA&ES). Karen Ross and Jerry Lohr were among seven award recipients at the College Celebration on October 12, 2007.

The award recognizes "contributions and achievements that enrich the image and reputation of the college and enhance its ability to provide public service." Both Ross and Lohr were named "Friends of the College."

Karen Ross is president of the California Association of Winegrape Growers (CAWG), representing California winegrape growers before the state legislature and government agencies, and in the news media. She has had many UC Davis collaborations, including efforts to create educational opportunities for California winegrape growers to learn about sustainable agriculture practices, air and water quality issues, and climate change impacts.

Ross is a member of the CA&ES Dean's Advisory Council, an associate fellow to the Board of Visitors and Fellows in the UC Davis Department of Viticulture & Enology, and a member of a stakeholder committee selecting a new UC Vice President for Agriculture and Natural Resources. She has also served on important committees to select key agriculture faculty.

Under Ross's leadership, CAWG and the Wine Institute created a code of environmental and social values — the Sustainable Winegrowing Program. Other commodity groups have followed suit with similar programs. In 2006, CAWG and the Wine Institute commissioned a report that underscored the economic contributions of the wine and winegrape industries — $51.8 billion in California and $103 billion nationally.

Ross was instrumental in the formation of the National Grape and Wine Initiative, an organization seeking federal funding for research and outreach in grapes and wine.

She has many other public service affiliations, including the Agricultural Education Foundation, the California State Board of Food & Agriculture, California Women for Agriculture, and Women for WineSense.

"Karen is an excellent sounding board for what issues are on the minds of growers and the kinds of research and education needs that would most impact their efforts to stay competitive in what has become a global wine business," says Jim Wolpert, former chair of the Department of Viticulture & Enology. "The department wanted to recognize her for her leadership both in California and nationally."

Jerry Lohr is the founder and president of J. Lohr Vineyards & Wines (San Jose, CA) and has been an active supporter of the UC Davis Department of Viticulture & Enology for many years.

"Jerry Lohr has given richly of his time and talent to our department and campus," says Andy Waterhouse, interim chair of the UC Davis Department of Viticulture & Enology. "His leadership has made a tremendous impact and the knowledge and perspective he brings is invaluable."

Lohr is an active member of the Trellis Alliance and the department's Board of Visitors and Fellows. He supports outreach efforts such as the annual RAVE conference for the wine industry. He has contributed knowledge, skills, and education as an engineer and builder of his own winery to the design and planning of a new campus winery. Lohr is an active supporter of the UC Davis Heritage Vineyard and Oakville Research Center in Napa Valley.

Since the founding of his first vineyard in the Arroyo Seco appellation of Monterey County in 1971, Lohr has worked to develop the potential of the coastal region. He was among the first to explore the Paso Robles area, where J. Lohr Vineyards & Wines' red wine production is based.

Lohr has held many important leadership posts, including director and chair of the Wine Institute, founding director and four-time president of the Monterey Vintners and Growers Association, and director and chair of the marketing committee for the Paso Robles Vintners & Growers Association. He was a cofounder of Wine Vision, a strategic planning initiative to expand the global market for U.S. wine. ■

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Brassfield Estate Winery

Continued from page 88

fruit can be dumped at once, and effectively metered-out for sorting, automatically. The second vibrating conveyor is operating at a slightly faster speed to "pull clusters away" for easier inspection and sorting.

"The small drop between the conveyors also promotes separation," Steve Smallwood (Sierra Manufacturing) explains. "When properly controlled, a single layer of fruit can be achieved. In addition to providing an effective sorting platform, the tandem conveyor system ensures an even feed to the destemmer, or alternatively to the press."

"Only one forklift driver, and one person sorting on the platform are needed," Robinson says. "Our operator on the platform can run the system as fast or slow as he likes. Controls are all on a touch-screen panel off to the side of the system. There are several safety stops on the platform.

"Since we feed our Kappa destemmer with a steady flow of red grapes, the destemmer does a better job of separating fruit and stems. White grapes go whole-cluster to the press, whose chute is connected to the end of the conveyor." (See page 00)

Jerry Brassfield originally purchased his Lake County, California. land to establish a cattle ranch in the mid-1970s. In 2001, he began planting vineyards, and Brassfield Estate Winery was born. There are 260 acres under vine, with 19 grape varieties. Planting is headed toward an ultimate goal of 500 to 600 acres of vineyard.

Robinson is pleased with the way the receiving system works with his preferred half-ton picking bins and gentle handling. "We're lucky that, as an estate winery, we can pick in small bins and deliver them directly to receiving," he says. "If we can maintain gentle handling and quality control, now that we've got the receiving system for it, we may look into machine harvesting next." ■

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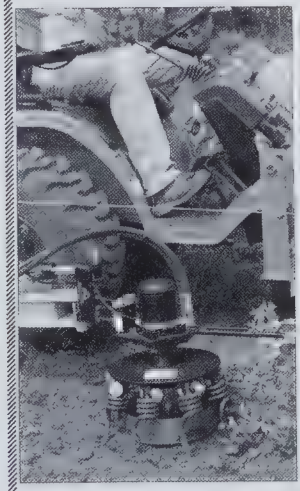

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NATIONAL GRAPE REGISTRY — UC DAVIS REPLY

Dear Richard Smart and PWV:

In the September/October 2007 *PWV Journal* Dr. Richard Smart wrote a column on Albariño in which he offered some comments about the new National Grape Registry (ngr.ucdavis.edu). We appreciate very much the interest in the NGR website and would like to explain our reasoning behind the inclusion of grape synonyms on the site.

The NGR website was launched November, 2006 in response to grape and wine industry demand for a user-friendly source for easy location of grape plant material within the U.S. Most wine grape varieties have long histories and are grown in multiple locations, many of which have given varieties local names.

Several websites, and numerous books and other sources, have attempted to sort this out by proposing prime names and likely synonyms for the large number of grape varieties which now exist throughout the world. One of the most respected of these references is the Vitis International Variety Catalogue (VIVC) website in Europe, which, in 2007, updated its format and content. The NGR database was compiled and annotated using as one of its references the former version of the Vitis database, which is no longer accessible.

When a variety name is offered as a prime name on the NGR website, it means that this name is in use in a public grape collection and/or the grapevine nursery trade in the United States. The NGR prime name may or may not be the same as the prime name approved by the federal government (TTB) for use on wine labels, however the NGR does list the TTB prime name (or names) where established for an individual variety. The key to the NGR prime name is that it is the name by which the grape is known at the sources offering it to grape growers and other interested parties.

It is not the mission of the NGR website to resolve disputes associated with proposed synonyms, although we plan to include such information as it becomes available. A large database of this sort will evolve and we welcome suggestions for improvements, and updates based on reports, which have escaped our inclusion.

The overriding policy for the listing of grape name synonyms on the NGR website is that of broad inclusion from reputable sources. Long-term usage of a name in connection with a particular grape in a particular location is considered justification for including that name as a synonym.

DNA validation of synonymy is not required for the purpose of inclusion of a synonym name, since some users may be searching for the variety under alleged or even discredited synonyms, and many proposed synonyms have not been tested for verification. Where supported by adequate scientific testing, notations regarding naming inaccuracies will be included in the Comment section on an NGR grape variety page.

Regarding the particular grape varieties mentioned in Dr. Smart's column, we offer the following explanations which we believe are consistent with the approach outlined above.

Dr. Smart states that Verdelho is an incorrect synonym for Verdejo, as "they are two different varieties." We are aware that there is a report that DNA of the variety Verdejo blanco does not match that of Verdelho in one collection.

However, the name Verdejo has been used for several grapes, including white and black varieties. Similarly, Verdelho is a popular Iberian grape name that has been used as both a prime name and synonym for several grapes in Portugal and Spain, and the new Vitis (VIVC) website lists Verdelho as a local use synonym for Verdejo blanco.

Another distinct white grape variety was once also called Verdelho, but has now been officially renamed Gouveio; it is planted on the Portuguese mainland (Alentejo and Dão regions). The Vitis database continues to recognize the former name, Verdelho, as a synonym for Gouveio. A Portuguese database (Vinho Verde) also shows this synonymy: www.cvrvv.pt/pt/vinhoverde/glossario/glossario.asp.

Dr. Smart indicates that Godello is an incorrect synonym for Verdelho. However, Jancis Robinson (Oxford Companion to Wine, 2006) and other wine sources state that Godello (a Spanish white grape grown in northwestern Spain) is grown in Portugal on the south side of the Minho River as Gouveio, linking these names together.

For robust search ability, we believe that it is appropriate to include the names with long-term usage as synonyms on the NGR site. Naming issues, particularly in regard to Spanish and Portuguese grapes, are particularly complicated and are currently undergoing changes.

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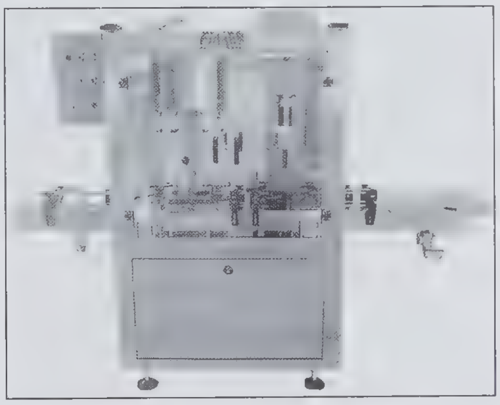

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Finally, Dr. Smart mentions that Mencía (a Spanish red grape) is not on the NGR list. No public collection or commercial nursery within the U.S. has, to our knowledge, offered Mencía for sale; however, a selection is currently at FPS undergoing quarantine testing.

Even when limited to those grapes now present in the U.S., the grape database is extremely large. Every effort will be made, on the NGR website, to note incorrect names where DNA evidence has been produced in support of the comment. We appreciate the opportunity to offer these comments regarding the National Grape Registry.

We will continue to work with experts both in the U.S. and other countries to present accurate profiles of the grapes on the website. Please contact the site manager, Nancy Sweet, with any comments or suggestions you may have.

Nancy Sweet, NGR Site Manager, nlsweet@ucdavis.edu
Dr. Deborah Golino, Director, Foundation Plant Services, UC Davis
Dr. Ed Stover, Curator, National Clonal Germplasm Repository, USDA-ARS, Davis
Dr. Andy Walker, Professor of Viticulture & Enology, UC Davis

Dear Friends at UC Davis,

I was very glad to read your letter that the Editor passed on to me. It is nice to have the reassurance that every effort will be made to keep the data base accurate, and that comments are welcome. May they flow in.

I have been exposed to the problems of grape variety names for some time, and I concur fully with the problems noted by the UC Davis staff.

I was aware of naming problems in Australia in the 1970s which were resolved by Australian researcher Alan Antcliff and visiting French ampelographers. Some of the problems were imports from UC Davis, which information was subsequently passed onto California.

When in New Zealand, I initiated a Grapevine Variety Register which was published in 1989. We attempted to put an incomplete and messy set of import records in order, which was supplemented by an ampelographic study by Doris Zuur which found several misnomers. We included our virus testing results to date.

The prime name/valid synonym/unacceptable synonym classification which is used by the Australian viticulture text book by Coombe and Dry was initially developed by Doris

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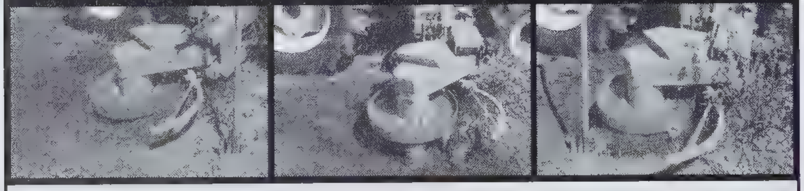

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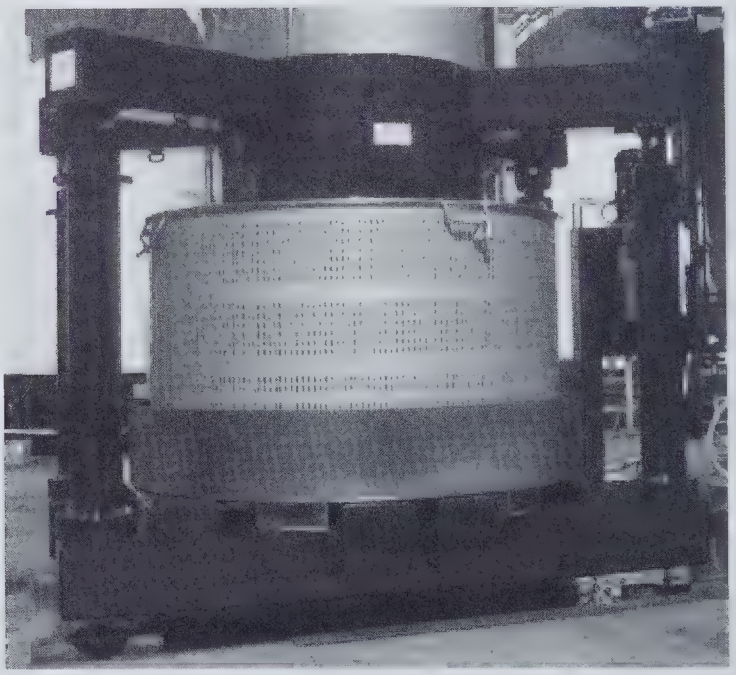

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Zuur and I. I believe it has merit, and is user-friendly, and better reflects reality than the NGR system on the web site.

I do not think that Verdejo is the same as Verdelho, and I am quite sure that Jancis Robinson would not be comfortable being quoted as an ampelographic authority, and the *Oxford Companion to Wine* should not be regarded as a primary reference on ampelography. Jancis is one of a few wine writers who is aware of the rich diversity of grapevine varieties and their wines, but this does not qualify her as an ampelographer.

In my opinion, it would be exceedingly simple to establish contact with the leading authorities on varieties in both Spain and Portugal, and other countries for that matter.

In Australia, we have access to Google scholar which threw up around 100 listings for Spanish winegrape varieties and ampelography.

There were some articles recently published in the *American Journal of Enology & Viticulture* (one of which describes ampelography in northwest Spain), another in English in *Acta Horticulturae* regarding DNA testing and ampelography.

There are English-speaking experts with email addresses on recent articles. There is also a large cultivar collection at "El Encin," Madrid which is the subject of an English article, and I believe a new Spanish ampelography book, although I have not seen it. I have a set of Portuguese ampelography books which are readily available. It is not difficult to make these contacts to resolve these issues.

I do not think that DNA-verification is always necessary, as classical ampelography methods have proven their worth in the past. I, for one, would not allow confusion to remain about synonyms which had been corrected by classical ampelography but which await DNA testing.

My point, in what I wrote in my September/October 2007 column, is that the American wine industry has been poorly served in the past by sloppy variety naming, and that this should not continue.

I am impressed by the National Grape Registry web site from UC Davis (Australia does not have one). My appeal is that it should be accurate. It is apparent that the people responsible for this share the same ambition.

Richard Smart

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WINE MICROBIOLOGY

by Robert Tracy

Achieving desired wine quality and style is a balancing act

Many microorganisms play a role in the winemaking process, from grape receiving to finished wine. On the surface, there are "good" microbes that play a positive role in producing wine with a desired quality and style, and there are "bad" microbes that negatively impact wine.

However, when one looks below the surface, the picture of wine microbes and their influence on wine quality and style becomes significantly murkier. During my seven years in the wine industry as a microbiologist, as a quality manager, and now as owner of a mobile wine laboratory, discussions regarding wine microorganisms almost invariably focus on enhancing the positive attributes of the "good" microbes, while preventing the negative characteristics of the "bad" microbes.

While this is a completely understandable approach, it does not take into account the complexity associated with many of the wine microbes and their impact on wine quality and style — several of the microbes have the capacity to impact wine both positively and negatively and therefore cannot be accurately classified as "good" or "bad." Under these circumstances, the winemaking process becomes a balancing act where the positive characteristics of wine microbes need to be accentuated and the negative attributes sufficiently suppressed to make a superior wine.

Ultimately, these "risk-and-reward" wine microbes can have a profound influence on the quality, style, complexity, and uniqueness of a wine. Below is a review of these "double-edged sword" wine microbes and how they can positively influence wine quality and style while also causing wine spoilage.

"Risk-and-Reward" yeast

Many yeast genera can contribute to wine quality and style. Depending on their ability to survive the various stages of the winemaking process, yeast can be found on grapes, in the must, during the early stages of alcoholic fermentation, at the end of fermentation, and during ageing.

In each stage, yeast can produce a significant amount of metabolites (such as ethanol, glycerol, acetaldehyde, acetic acid, ethyl acetate, diacetyl, formic acid, isovaleric acid, hexanol, 4-ethylphenol, hydrogen sulfide, terpenols, etc.), which can lead to an endless array of wine flavors.[1] It is when these flavor compounds occur in excess concentrations that they become undesirable.

While the majority of yeast genera that can grow in grape juice or wine can cause spoilage (see Fugelsang and Edwards[2] and du Toit and Pretorius[3]), a significant number can also favorably impact wine quality and style. Only two of the known yeasts appear to negatively impact juice or wine with no positive contribution: *Zygosaccharomyces* sp. causes secondary fermentation of wine with high levels of carbon dioxide and high levels of acetic acid, and *Saccharomycodes ludwigii* produces high levels of acetaldehyde and forms a slimy flocculent mass.

Table I shows the yeasts that have the "risk-and-reward" capability and how they can both positively impact wine (reward) and spoil wine (risk).

"Risk-and-Reward" bacteria

Lactic acid bacteria play an important role in winemaking by conducting malolactic fermentation, which is a secondary fermentation generally following alcoholic fermentation, converting malic acid to lactic acid and thus reducing the total acidity of a wine. The risk is if certain lactic acid bacteria grow at the incorrect time during the winemaking process.

There are four genera among the lactic acid bacteria that can proliferate in grape juice and wine: *Lactobacillus*, *Leuconostoc*, *Oenococcus*, and *Pediococcus*. Each of these can cause wine spoilage — in some instances severe wine spoilage. However, several also have the potential to positively contribute to the winemaking process before the completion of malolactic fermentation.

Among the lactic acid bacteria, only *Lactobacillus kunkeei* appears not to add any redeeming quality to wine. This microbe produces high levels of acetic acid and strongly competes with yeasts during primary fermentation to cause sluggish/stuck fermentations. The wine spoilage potential of these microorganisms is discussed in-depth in the following reviews and books: Fugelsang and Edwards,[2] du Toit and Pretorius,[3] Osborne and Edwards,[8] and Lonvaud-Funel.[9]

Positive and negative contributions of "risk-and-reward" bacteria are shown in Table II.

"Risk-and-Reward" mold

The fungus *Botrytis cinerea* is commonly associated with the decay of ripe grapes, which is termed *Botrytis* bunch rot. During *Botrytis* bunch rot, the fungus attaches to clusters of grapes and infects them by penetrating wounds on their surface caused by insects, birds, cracking, or hail. If persistent cool, wet conditions occur, the chance of infection increases.

The wine spoilage concerns associated with *Botrytis cinerea* infection of grapes include: high acetic acid levels, browning of white wine due to the presence of laccases, problematic primary fermentations due to high sugar content and nutritional deficiencies, reduction in total anthocyanins of red wines, and problems clarifying and filtering wines due to the presence of glucans.[2]

Under ideal environmental conditions (alternation of wet and dry conditions), *Botrytis* can take on a benevolent form of grape infection called "noble rot." During "noble rot," *Botrytis* removes water from the grapes during dry conditions, which concentrates sugars and flavors. This process can result in a distinctive sweet dessert wine that balances a heightened acidity with intense aromas such as honey, apricot, orange, and caramel.

Table 1: Positive Contributions and Spoilage Risks of "Risk-and-Reward" Wine Yeasts

"Risk-and-Reward" Yeasts	Positive Contribution	Spoilage Risk
Brettanomyces sp.	➢ Produces 4-ethylphenol (4-EP) and 4-ethylguaiacol (4-EG) that can add complexity and stylistic character to wine if Brettanomyces is properly managed ➢ 4-EP and 4-EG at low end of sensory threshold (400–600 g/L and 50–100 g/L, respectively) can impart positive wine aromas: vanilla, smoky, cloves, and spicy	➢ Produces mousy taint, volatile fatty acids (i.e. acetic acid and isovaleric acid), volatile phenols (i.e. 4-EP and 4-EG) ➢ Produces esterases which can hydrolyze fruity/floral esters ➢ Spoilage aromas/flavors include horse blanket, band-aid, barnyard, wet dog, and ammonia
Candida sp.	➢ Presence during fermentation produces honey and apricot aromas ➢ Co-fermentation with *Saccharomyces cerevisiae* can produce unique wine aromas and superior quality wines[4,5,6] ➢ B-glucosidase activity to liberate aroma substances in wine (i.e. terpenols)[7]	➢ Produces film layer on wine surface when exposed to air ➢ Oxidizes ethanol to produce high levels of acetic acid and acetaldehyde
Kloeckera apiculata	➢ If ethyl acetate is kept below sensory threshold of 150–200 mg/L, it adds richness and sweetness to wine	➢ High levels of acetic acid and ethyl acetate (nail polish remover or glue) ➢ Produces killer toxins that can suppress growth of *Saccharomyces cerevisiae*
Metschnikowia pulcherrima	➢ -glucosidase activity to liberate aroma substances in wine (i.e. terpenols)[7]	➢ Produces high levels of acetaldehyde and ethyl acetate
Pichia sp.	➢ If ethyl acetate is kept below sensory threshold of 150–200 mg/L, it adds richness and sweetness to wine ➢ -glucosidase activity to liberate aroma substances in wine (i.e. terpenols)[7]	➢ Grows on surface of wine as a film layer ➢ Grows on surface of wine as a film layer — chalky in appearance ➢ Produces acetaldehyde and high levels of ethyl acetate
Saccharomyces cerevisiae	➢ Primary yeast used for alcoholic fermentation ➢ Several different strains commercially available that each impart unique flavor characteristics to wine	➢ Secondary fermentation in bottled wine with residual sugar ➢ Forms ethyl carbamate
Schizosaccharomyces pombe	➢ Performs malolactic fermentation by converting malic acid to lactic acid	➢ Secondary fermentation in bottled wine ➢ Sediment formation in bottle ➢ Wine deacidification ➢ Produces off-flavors in wine

Summary

The purpose of this column is not to diminish the spoilage potential of wine microorganisms, which can be quite significant for many (such as *Brettanomyces* sp., *Zygosaccharomyces* sp., *Saccharomycodes ludwigii*, *Kloeckera apiculata*, *Candida* sp., *Pichia* sp., *Acetobacter aceti* (produces excessive acetic acid and ethyl acetate), *Pediococcus* sp., *Lactobacillus* sp., *Botrytis cinerea*, etc.), but rather to show that most of the wine microbes can act as a "double-edged sword" in that they have the capability to impact wine both favorably and unfavorably depending on the winemaking process and its associated conditions.

As shown above, this also includes microbes that are traditionally considered to have only a positive impact such as *Saccharomyces cerevisiae* or *Oenococcus oeni*. By gaining a more thorough understanding of each wine microbe, the spoilage risks can be properly balanced with their positive contributions, thus enabling wineries to create wines with a unique local stylistic character and endless aroma/flavor complexity. ■

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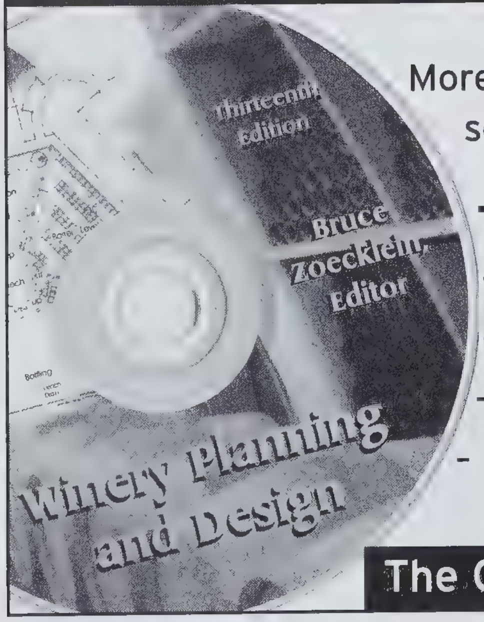
Table 2: Positive Contributions and Spoilage Risks of "Risk-and-Reward" Wine Bacteria

"Risk-and-Reward" Bacteria	Positive Contribution	Spoilage Risk
Lactobacillus brevis	➢ Reduces wine and must total acidity	➢ Production of mousy taint and acetic acid ➢ Degrades tartaric acid ➢ Mannitol formation ➢ Produces high level of ethyl carbamate precursors ➢ Produces biogenic amines
Lactobacillus hilgardii and *Lactobacillus cellobiosus*	➢ Reduces wine and must total acidity	➢ Production of mousy taints and acetic acid ➢ Produces acrolein from glycerol formation that can cause bitterness ➢ Produces high level of ethyl carbamate precursors ➢ Produces biogenic amines
Lactobacillus plantarum	➢ Reduces wine and must total acidity ➢ Does not produce acetic acid from residual sugar (i.e. glucose)	➢ High contamination levels in high pH wine can cause stuck/sluggish fermentations ➢ Degrades tartaric acid ➢ Produces elevated diacetyl levels
Leuconostoc mesenteroides	➢ Reduces wine total acidity	➢ Produces acrolein from glycerol formation that can cause bitterness ➢ Produces mousy taint ➢ Produces polysaccharides that increase viscosity (i.e. ropiness)
Oenococcus oeni	➢ Primary lactic acid bacteria used for malolactic fermentation ➢ Reduces wine total acidity ➢ Produces more controlled diacetyl levels (1 to 4 mg/L) which contributes to desirable buttery and/or butterscotch aromas ➢ Microbial stability ➢ Reduces vegetative and grassy aromas ➢ Improves front-palate roundness	➢ Production of acetic acid ➢ Reduce concentration of esters ➢ Produces ethyl carbamate precursors ➢ Produces biogenic amines
Pediococcus sp. (*Pediococcus damnosus*, *Pediococcus parvulus*, & *Pediococcus pentosaceus*)	➢ Reduces wine and must total acidity ➢ Does not produce acetic acid from residual sugar (i.e. glucose) ➢ Esterase activity to liberate unique wine aromas	➢ Produces acrolein from glycerol formation that can cause bitterness ➢ High contamination levels in high pH wine can cause stuck/sluggish fermentations ➢ Produces polysaccharides that increase viscosity (i.e. ropiness) ➢ Produces elevated diacetyl levels ➢ Produces biogenic amines



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BOTTLING AND TRANSFERRING UNLABELED WINE WITHOUT A LABEL APPROVAL — The U.S. Department of Treasury's Bureau of Alcohol and Tobacco Tax and Trade (TTB) requires that wineries obtain a Certificate of Label Approval (COLA) for all bottled wine meant for sale in the U.S. This does not mean that wineries are required to actually affix a label to each bottle at the time of bottling, however. In fact, bottling "shiners" (without label) is increasingly common.

Winemakers often don't finalize the composition of a wine blend until just prior to bottling. Printing specific information on a wine label, including the components of a particular blend and the percentages of varieties used, is also a common trend, so winemakers often put off designing their labels until after the wine is bottled and affix the label at a later date.

A common compliance error results when the winery doesn't obtain a COLA until after the wine is bottled and sometimes until it is transferred in bond to a storage facility. Federal regulations require wineries to obtain a COLA prior to bottling, and all unlabeled wine that is transferred in bond must be accompanied by a COLA.

The label being submitted for approval must contain the mandatory information about the wine, including but not limited to brand, variety or class, percent alcohol by volume, net contents, the bottler's name and address, the sulfite declaration, and the health warning statement. This generic label need not be the label that is eventually affixed to the bottle as long as the bottler obtains another COLA for the final label design.

FAILING TO OBTAIN NEW FEDERAL LABEL APPROVALS WHEN PRODUCT SPECIFICATIONS CHANGE — Many winery owners and their staffs are unclear about when they are required to apply for a new Certificate of Label Approval or COLA from TTB. As many winery personnel know, you are not required to obtain a new approval for every new vintage of a wine that you have a COLA for from a previous year.

The rule in compliance is that there is an exception to every rule. If the wine in question has a different alcohol content as a percentage by volume from the previous year, then you may need a new COLA. If an existing COLA shows the alcohol content within 1% of the new vintage's alcohol test and the wine is 14.1% or greater than no COLA is needed. The same is true when the wine is within 1.5% of what is printed on the previous vintage label when the wine is 14% or lower.

The problem arises when the tax class of the wine changes altogether. Even if the new vintage is within the 1% or 1.5% allowed tolerance but the tax class changes you must apply for a new COLA. Make sure you are paying the correct tax rate based on the alcohol test and not the previous year's COLA.

Another common error in alcohol labeling is the failure to obtain a correct alcohol test prior to obtaining a COLA. If you have an alcohol test that differs from your label statement and your COLA, then your inventory can be frozen until a new COLA has been approved. In this case, the most prudent course of action is to request permission to "Use Up" the incorrect label. This is as simple as applying for new COLA except that you provide an explanation of errors and receive permission to use the label for a period of time.

The back of the COLA form has a table which shows the conditions under which a winery operator must apply for a new COLA. This is a great quick reference if you are unsure about whether you need to reapply or if you can skip it for a vintage.

MAKING QUARTERLY EXCISE TAX PAYMENTS WITHOUT ADEQUATE TAX DEFERRAL BOND COVERAGE — As of January 1, 2006, a winery owner may make quarterly tax payments if the expected tax liability for the calendar year is less than $50,000 and was not more than $50,000 the previous calendar year. This is a very convenient regulatory change for California wineries that are filing state excise tax returns each quarter.

Sufficient tax deferral coverage is required before deferring taxes until the end of the quarter. That is, the winery can wait to pay taxes on the wine until the end of the quarter, but must have insurance sufficient to pay the deferred tax if it becomes necessary. Tax deferral bond coverage can be added to a winery's operating bond to cover the tax liability on wine that has been removed from bond when the tax liability has been determined but not yet paid.

According to the TTB's Wine Tax Group, if the taxpayer has bond coverage they have a certain amount of deferral coverage also. A bond that is for $1,000 has $500 of deferral coverage already included. A bond that is $2,000 or more has $1,000 deferral coverage already built in. However, often wineries don't have enough deferral coverage in their bond coverage for an entire quarter's worth of tax-paid removals.

The TTB Investigative Office in California has no tolerance for wineries without adequate bond coverage. If deferral coverage is not adequate and the taxpayer does not get correct bond coverage, the winery can be forced to pre-pay taxes on wine removed and file period-returns in addition to the pre-payment returns.

The easiest way to calculate the amount of deferral coverage needed is to carefully estimate the largest number of gallons that may be removed in a tax period and multiply those gallons by the expected tax rate, which is determined by the alcohol content and the small producer's eligibility for the tax credit. It is also a safe bet to double your operating bond coverage, because most wineries have two vintages in bond at some point.

For instructions on calculating Wine Bond Coverage go to www.ttb.gov. Click on the "Wine" tab by the top of the page. Click on "wine forms" located under "quick links" along the right-hand margin. The Wine Bond Form Worksheet is the last form on the list: TTB F 5120.36w.

FILING LATE EXCISE TAX RETURNS TO TTB — Most wineries are still required to pay excise taxes semi-monthly either because they don't have sufficient tax deferral coverage or they have annual tax liability greater than $50,000. TTB publishes the semi-monthly payment schedule at the end of each year on their website at www.TTB.gov for the upcoming year.

Semi-monthly payments are due around the 14th and 29th of each month but if those dates fall on weekends or holidays, the due dates are moved forward — to the 13th and 28th or even earlier. Taxpayers don't always check that payment schedule prior to filing a return, and it is easy to miss a due date, since most of us are conditioned to paying on the 15th of the month to other agencies.

Penalties for failure to pay tax at the time required, categorized as willful refusal to pay the tax, are all too common. According to the Code of Federal Regulations, late filing can result in a penalty of "five percent for each month or fraction thereof of the delinquency, not exceeding 25% in the aggregate, unless it is shown that the delinquency is due to reasonable cause and not to willful neglect." In addition, interest on the principal amount will accrue until it is paid.

DESTROYING WINE WITHOUT TTB PERMISSION — Federal regulations state that "wine on bonded wine premises may be destroyed on or off wine premises by the proprietor without payment of tax.

A proprietor who wants to destroy **wine** on or off **wine** premises must file with the appropriate TTB officer an application stating the kind, alcohol content, and approximate volume of **wine** to be destroyed, where the **wine** is to be destroyed, and the reason for destruction."

If wine is unmarketable due to spoilage, you may ask permission to destroy wine without the inspection by a TTB investigator. A simple letter to your area field office requesting permission to destroy wine is usually all that is required to legally destroy the wine. Wine that is destroyed without permission from TTB carries tax liability, and you must still prove that it was destroyed.

Wineries that destroy wine and account for the destroyed wine as inventory losses due to evaporation or other reasons may be found to be defrauding the government. If a large quantity of wine is destroyed, causing the winery to exceed the typical 6% annual gallonage loss expected from evaporation, an audit could ensue.

TRANSFERRING THE SMALL PRODUCER'S TAX CREDIT ON PURCHASED WINE — Small wineries that produce between one and 250,000 gallons of wine in a calendar year are eligible for up to $0.90 of credit per gallon for the first 100,000 gallons they remove from bond in a calendar year.

Under certain circumstances, an eligible small producer who holds title to the wine at the time of removal can transfer the credit to another bonded facility. The credit transfer is often used by small producers who store and ship from an off-site warehouse location.

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For accounting reasons, these small proprietors only want to pay taxes on wine that is being sold while keeping the remaining wine in bond. The problem occurs when not all of the wine is actually fermented by the small producer. If a portion of the wine being removed from bond was purchased by the small producer and blended into the wine they did actually ferment, the tax credit on the purchased wine cannot be transferred.

The small proprietor can either notify the transferee that a portion of the wine should be paid at the full rate, or the small proprietor can pay the tax and take the $0.90 credit per gallon on all the wine that is removed prior to shipping it to the storage facility.

DOING BUSINESS WITH UNLICENSED CUSTOMERS — It is important to know your customers. In the wine industry, that means that you should know whether or not they are licensed to hold title to and sell wine. Many small wineries are engaged in some sort of custom crush business in addition to producing their own brands; they should be certain that all their customers are licensed.

In California, you can easily check the license status of a potential custom crush client by visiting the California ABC's website at www.abc.ca.gov. The ABC's license query system allows you to check for licenses based on an individual's name, a business name, a trade name, or address.

Custom crush clients should hold a Type 17 Wholesaler's license, or they should be a licensed winery with a Type 02 Winegrower's license. Both of these types of businesses are first required to obtain a Federal Basic Permit, but you can rest assured that those have been issued because most states will not issue a license until a Federal Basic Permit has already been obtained. The bottom line is you should not sell wine to any unlicensed entity other than a consumer who will not resell the wine.

FAILING TO UPDATE TTB AND STATE AGENCIES OF OWNERSHIP AND PREMISES CHANGES — Federal and state regulations require winery applicants to provide details regarding who will own and operate the winery and information about the physical premises and equipment that make up the bonded area at a winery. It is all too common for small incremental changes in these details to go unreported to the agencies that license and regulate wineries.

If a winery owner converts his business from a sole proprietorship to a Limited Liability Company (LLC), for example, state and federal agencies consider this a change in ownership, which must be reported (and in some cases new applications must be filed), even if the sole proprietor is now the sole member of the newly formed LLC. Even small changes to corporate boards of directors or other officers or seemingly insignificant stock changes should be reported to TTB and to your state. Additionally, if a winery adds onto its building, builds an additional building, or simply adds an outdoor crush pad, the description of the physical premises should also be updated.

As a winery owner, in order to ensure that your license information is current, review your application files at least once annually to make sure they are in compliance. Updates are dated and numbered sequentially on TTB forms, so it is easy to check your most recent update. State agencies deal with ownership and premises changes differently, so it is wise to call your state ABC office for guidance on how to update your state licenses with these changes.

FAILING TO PROPERLY REPORT EXPORTS — Wine produced in U.S and sold to buyers in other countries is considered exempt from the per-gallon excise tax charges at the federal and state levels. Exports often include sales to airlines and cruise ships. For wineries shipping outside the U.S., the savings can add up.

Wineries are required to report any bonded wine that is exported outside the U.S. on their Monthly Report of Wine Premises Operations, report #702. Most winery operators do not realize that there are other documents that must be filed in order to secure the tax exemption or to obtain a refund if the exported products have been removed from bond and taxes paid prior to export.

For wines shipped directly from bond, you should complete and file TTB F 5100.11 Withdrawal of Spirits, Specially Denatured Spirits, or Wines for Exportation. To request a refund or credit for taxes paid on exported wine you should file TTB F 5120.24 Drawback on Wine Exported. Both forms are simple to complete and should be filed at the time of export. Proof of exportation should be kept on file and TTB will typically accept a signed bill of lading showing with the foreign destination as the point of delivery.

SHIPPING TO CONSUMERS IN OTHER STATES WITHOUT PROPER LICENSING — A guest in your tasting room asks you to ship wine to Alabama. When you let them know it's illegal to ship to Alabama, they respond with "but the winery down the road does…"

It's hard to compete with a neighboring winery that doesn't follow the rules of the law. It's even harder to keep

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up with the myriad of changing rules and regulations. But for the sake of your business, it's important to stay compliant when it comes to shipping to consumers in other states.

With the dwindling number of reciprocal states, most states have transitioned to a permit system, requiring your winery to be licensed in that state before you ship to consumers. Shipping without a license can come with heavy state penalties and legal actions. In most cases, the shipping winery owes sales and/or excise taxes when making consumer sales in other states, and the state and federal agencies take their revenue very seriously.

Shipping without a license could also potentially affect your Federal Basic Permit. TTB ruling 2000-1 indicates that "TTB could under appropriate circumstances take administrative action against a (winery) where the (winery) ships alcoholic beverages into a state in violation of the laws of that state."

What happens if I break the rules?

Without exception, all of the common compliance errors listed above can carry stiff penalties with the TTB, and TTB staff members have discretion when determining penalties for all of these violations. They consider the compliance history of the violating winery and whether the violations were willful or not. First-time offenders with no history of compliance problems may receive a simple warning, and as long as corrective action is taken to avoid future violations, there are no monetary penalties. In more extreme cases, monetary penalties may range from $5,000 to several hundred thousands of dollars.

If monetary penalties are imposed, the winery may settle with TTB with an offer to compromise. If the violations are more serious, then a two- to 45-day suspension may be imposed, and in the worst cases, the Federal Basic Permit can be revoked. TTB will consider prior suspensions and revocations when reviewing new permit applications, so a negative history will follow the offender.

The good news is that, in most cases, TTB staff will work to educate first-time offenders and help them avoid these common mistakes in the future. Remember, TTB staff are here to help you! ■

Rachel Dumas Rey is president of Compli, a full service beverage compliance firm in Paso Robles, CA. Prior to establishing Compli in 1997, she worked for the U.S. Department of Commerce's Export Administration in Washington D.C.

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PERSONNEL POINT OF VIEW *by Anne Heron*

Fire, Aim, Ready

The beginning of the year is a time when wineries are wrapping up the old year and opening a new one. For many of us, this is a time for reviewing results, writing performance reviews, calculating merit increases or bonuses, and establishing expectations for the upcoming year. There is usually a flurry of activity.

When I talk with managers about this process, I often hear how difficult and time-consuming it is. When there are raises or bonuses involved, managers frequently wonder whether they are getting the best "bang for the buck" and whether the expense, in addition to conveying appreciation for a job well done, will also motivate employees to produce outstanding results in the upcoming year.

What managers are doing at this time of year can be described as taking a "Fire, Aim, Ready" approach to performance management. We "fire" feedback and a reward at our employees for a job well-done, "aim" for the results we want to accomplish going forward, and hope that the team is "ready" to succeed. How can we make this process even more effective?

LET'S LOOK AT THE "FIRE" PART OF THE CYCLE FIRST. Even if you deliver your performance reviews at another time during the year, the beginning of a new year provides an excellent opportunity to take a closer look at results achieved in the past and the impact they have had on the organization. Taking the time to analyze and clearly describe the successes and the efforts that did not go so well, provides the foundation for going forward. Here are a few things to think about and discuss with your team:

- Were the specific goals and financial measures achieved? If they were, what efforts were particularly helpful? If they were not, what got in the way? What can your team do differently in the coming year?
- Have there been other improvements that will benefit the winery? These might be process improvements, cultural changes, or improvements in individual performance. How can these be leveraged for future success?
- What were the "lessons learned" during the year? Did failures or "near misses" lead to any improvements? What were the impacts on productivity, quality, or safety?
- What is now possible for the winery? Are you closer to an overall financial target? Have you achieved greater quality or market share? What does the effort mean to the future of the winery?

This multi-dimensional year-end analysis of results is particularly important if you provide economic recognition at the end of the year, such as a merit increase or a bonus. To create the greatest impact on future performance, recipients must understand how their achievements affected both the dollars that they received and the organization's success.

With a clear "line of sight" from their performance to the reward, and then also to the overall results, employees will feel recognized for their accomplishments and motivated to take on future goals.

Managers sometimes ask about the best way to reward their teams when they've had good results, in the absence of a formal bonus plan or as a supplement to it. The question is often whether it is best to use individual performance-based awards or team rewards, such as profit sharing. Both approaches can be highly successful.

Your year-end analysis will tell you which approach will be most effective and lead to the future results you'd like to achieve. As you look at your analysis, ask yourself about the source of your group's accomplishments as well as its difficulties.

If you need to foster interdependence and cooperation, or if there is little difference in the impact of individual contributions, then rewarding each team member equally would be appropriate. The team-based approach is also useful when the initial expectations were not well-defined. It allows the manager to show appreciation for a job well done and rally the team for the next challenge, without having to define each employee's efforts and justify differences in individual awards. This is also the drawback of team-based recognition.

If you want to foster individual achievement and calculated risk-taking, or to acknowledge a specific accomplishment, then using individual performance-based awards is the most effective. The award should be accompanied by a specific description of the results that were achieved and their impact on the winery. It is particularly useful when these efforts also demonstrate on-going values or goals and thus can also be shown to serve the future needs of the winery.

LET'S LOOK AT THE "AIM" PART OF THE CYCLE. Once you have conducted a "Year in Review" discussion with your team, it's time to focus on the future and use the lessons that you've learned to help you set goals and ensure your progress. Once again, a multi-dimensional approach to planning is helpful as you hold discussions with your team. For example, ask yourself and/or the team:

- What are the goals and objectives of the winery this year? How must we adjust our vision to accommodate the results of the past? Take a broad view of the winery's future. In addition to revenue and profitability goals, do you wish to make any changes in other areas, such as introduce new brands or wines, broaden sales channels, plant new vineyards, or begin new construction? Also consider more strategic objectives, such as creating a mission statement, defining values, developing a leadership team, strengthening the culture, or building a bonus plan or rewards program.

- What functional plan and milestones does our department need to set to support the winery's plan? What additional goals do we want to set based on our "lessons learned" for improving productivity, quality, safety, and so on? What behaviors could we change to strengthen our culture?
- What tasks and results will be expected of individuals or teams? How do these impact the efforts of the department and winery? What development or training do employees need to achieve these objectives? What resources will be needed?
- Are the goals SMART? (Specific, measurable, attainable, relevant, time-defined)?
- How will we measure and report on our progress? How will we make adjustments if we are off track?

This part of the cycle also offers a great time to describe the possible rewards for achieving planned objectives. If you have a defined bonus plan, take time to review the plan with employees, so they fully understand what is expected and the benefits of achieving target results. If you don't have a formal plan, you might want to discuss other recognition ideas with your team. How will you celebrate milestones?

THE "READY" PART OF THE CYCLE IS WHERE THE ON-GOING ACTIVITY WILL OCCUR. This is the time to provide coaching and feedback to your team. It is very useful to conduct periodic meetings throughout the year to discuss results. If you're on track, acknowledge the success and discuss the behaviors and activities that helped the team achieve its milestones. These might be things such as exhibiting teamwork and cooperation, improving a work process, or "going the extra mile" in a specific situation.

If you're not on track, help members identify what is holding the team back and look for ways to resolve the problems. These meetings can be a valuable source of "lessons learned" for your next "Year in Review" analysis.

Summary

The Fire, Aim, Ready approach to performance management allows you and your team to start the New Year with a "blank slate." You've evaluated the past and learned what you could. Now you are ready to move forward, using what you've learned to aim at future success.

As the poet Edith Lovejoy Pierce put it, "We will open the book. Its pages are blank. We are going to put words on them ourselves. The book is called Opportunity and its first chapter is New Year's Day."

May this New Year be filled with opportunity and success for you and your team! ■

Anne Heron is a Senior Associate with The Personnel Perspective, a management consulting firm with focused expertise in strategic human resources initiatives, including executive search and placement, management training, compensation, and employment compliance consulting.

Anne has 25 years of management and HR experience. You can contact her at 707/576-7653.

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Financing for solar energy

Continued from page 19

wineries with tax bills that could take advantage of the tax credit and depreciation on a solar installation on their tax returns.

Guffey describes this as a "more or less standard lease arrangement" where the winery is listed as the system owner, getting both the tax credits and the rebates on their system, and financing the rest with a lease-to-own on a 7-year term. Payments on this lease are generally equal to, or competitive with, commercial loan payments.

"The longer leasing term is what makes these lease arrangements work," Guffey explains. "The more common length of a lease for other types of equipment or capital expenses is five years, but lenders agree that solar is unusual. With the large up-front paybacks from rebates and tax incentives, and the long-term financial benefits of generating your own energy, leasing can be beneficial to both lender and winery."

Finance model: Power Purchase Agreement

Fetzer Vineyards (Hopland, CA) has been implementing organic, sustainable, and environmentally-friendly practices in all aspects of its operations for many years. In 1998, before buying green energy (which was then, more expensive), Fetzer trimmed and audited, and established better energy-efficiency measures to save money. Fetzer locked in a green energy rate in 1998, and since then utility rates have increased, so the winery has been paying lower-than-market rates.

1n 2005–2006, 3 Phases Energy Services (San Francisco, CA), which had been connecting Fetzer to green energy resources, proposed that MMA Renewable Ventures (a national firm that arranges financing for clean energy investments) purchase, install, and own solar panels to generate solar power on the roof of Fetzer Hopland operations buildings under a Power Purchase Agreement (PPA).

The Fetzer installation was the first project commissioned under 3 Phases Energy's Daylight Savings service, a solar energy development vehicle, enabled by third party capital and efficient management of the renewable energy credits (RECs), to secure 100% renewable energy for customers at an affordable, long-term price.

The largest solar installation at any winery worldwide to date, Fetzer's system consists of 4,300 panels, located on the red wine barrel room and atop the bottling facility on 75,000 sq. ft. of rooftop, producing 1.1 million KwH/ year of energy. The business model is well-suited to large solar installations such as Fetzer needed, because the winery does not have to put up the large capital outlay for the solar system, and the size of the system pays off MMA's investment costs in energy generation.

Fetzer is buying power from a solar energy producer that just happens to be installed on its own rooftops. The array supplies 30% of Fetzer's energy needs (including 80% of the power needed to operate the bottling facility year-round) at lower-than-market, locked-in rates. An earlier 40 kW solar array at Fetzer supplies additional power needs of the Hopland operations.

MMA Renewable Ventures will finance, operate, and maintain the generation facility and sell the power to Fetzer under terms of a Solar Services Agreement (SSA) that sets electricity costs at a fixed rate. MMA sells energy to Fetzer from the array while collecting credits from PG&E at an ever-higher rate of payback. While still owning and having to maintain the system, MMA receives enough funds between what Fetzer pays, and what the PG&E market rate is, to profit.

"As one of the first and only wineries to purchase 100% clean power, Fetzer has a long-standing tradition of pioneering environmentally-sound business practices," said Susanne Zechiel, who oversees environmental programs for Brown-Forman's California Wine Group (Fetzer's parent company). "Building one of the largest solar energy arrays in the U.S. as a green power solution fits perfectly with Fetzer's business objectives and commitment to sustainability."

Power Purchase Agreements for small wineries

Until 2007, only solar installations larger than 250 kW qualified for a PPA, because the financial terms to profit all parties weren't feasible for small solar systems. But by mid-2007, some solar installer companies had worked out their own PPA-financing for clients who needed small solar energy systems.

New Clairvaux Vineyard (NCV), a winery and vineyard in Vina, CA, is owned by Cistercian (Trappist) monks. The order believes in and tries to practice self-sufficiency, and the idea of generating the energy to operate their winery appealed to their vision. After exploring finance options that would fit their unusual corporate and tax structures, they found installer Premier Power's (El Dorado Hills, CA) "FlexFit" PPA program for small commercial installations.

In September 2007, Premier Power installed a 60 kW system at New Clairvaux, with two ground-mounted arrays to power winery operations, and one to power irrigation for NCV vineyards.

The FlexFit PPA was ideal for NCV; they can get lower energy rates while the system owner (a third party found for them by Premier Power) gets the depreciation, tax credits, and rebates on the system. NCV is going to buy power from the system owner for the next 15 years, as it is generated by the solar system on their site.

"The rate charged by the system owner to NCV under the FlexFit plan is designed so that both parties win," explains Jason Grant (Premier Power). "We find a 'true rate,' which is an average of peak and off-peak Time of Use utility rates, and then set that rate for the 15-year life of the plan, with a fixed-inflator that is still below current energy rates of inflation. NCV gets predictable energy costs for the next 15 years, and we estimate they'll save 13% compared to what they would have paid the utility company."

Installation, risks, and maintenance costs fall on the system owner. Premier Power installs a web-based monitor whereby the system owner can check the solar system output at any time. The monitoring system can let the owner know if there is significant fall-off indicating maintenance needs, and lets both parties know how much the system owner will be billing to NCV (billing is for the energy the system produces, multiplied by the agreed rate).

"We designed the system to meet about 80% of NCV's power needs, so that they do not over-generate and have to pay for power they don't use," Grant explains. "When NCV uses more energy than they are generating, they'll pay the system owner for what the solar system produced, and the utility for any power coming from the grid in excess of that.

"What we needed to avoid, since the system owner is getting paid by the utility only for up to 100% of the winery's energy use, was a system that produced more than 100% of NCV usage. That situation would not benefit either NCV or the system owner."

Summary

As more wineries, other businesses, and individuals adopt solar energy self-generation in the U.S., utility companies will have so many tiny little power plants feeding energy to their grids that brown-outs could become a thing of the past — along with utility bills. ■

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~MATT EISER, December 2007

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The Minnesota Grape Growers Association (MGGA) host the conference to focus on the business of growing grapes and making wine in the northern United States. Sponsors include the MGGA, a Minnesota non-profit organization whose purpose is to further the art and science of growing grapes in cold climates, and many other mid-western state grape-growing associations are contributing to and partnering in this event. The conference goal is to provide a central home to share information related to cold-climate winemaking and grapegrowing. This "regionally unique" conference will draw attendees from many northern states including Illinois, Iowa, Wisconsin, North Dakota, South Dakota, Nebraska, Minnesota, and Canada.

For more information, go to: www.mngrapes.org website.

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THURSDAY, MARCH 20
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8:45AM–4:45PM

The morning sessions will emphasize the results of recent applied research in wine microbiology. A presentation on the most recent research on *Brettanomyces* will cover fermentation management strategies to reduce undesirable characters, and end with a noses-on experience into the many ways that *Brettanomyces* characters can be manifested. A microbe will be introduced whose name you'll certainly recognize, but whose presence you thought was harmless in wine. Because of new technology, we are able to isolate and identify organisms that the methodology did not allow to be seen before, thus giving a whole new perspective of the organisms on grapes and in wine.

The afternoon sessions will focus on exciting work being done in the UCD vineyard. Speakers will address new information on rootstock selection, weed management, and the possible use of a plant hormone to minimize berry damage during mechanical harvesting. Other topics include recent work with Cabernet Sauvignon to determine whether thinning really improves fruit quality; the influence of soil type on vine growth and fruit characteristics; an update on berry size and wine quality, plus news on vine-water relations from a new USDA specialist.

Cosponsors are UC Davis Department of Viticulture & Enology and the Trellis Alliance. The $220 enrollment fee includes lunch, sensory evaluation, and one-year membership in the Trellis Alliance. To register for RAVE 2008, please see http://extension.ucdavis.edu/unit/winemaking or call UC Davis Extension 800/752-0881.

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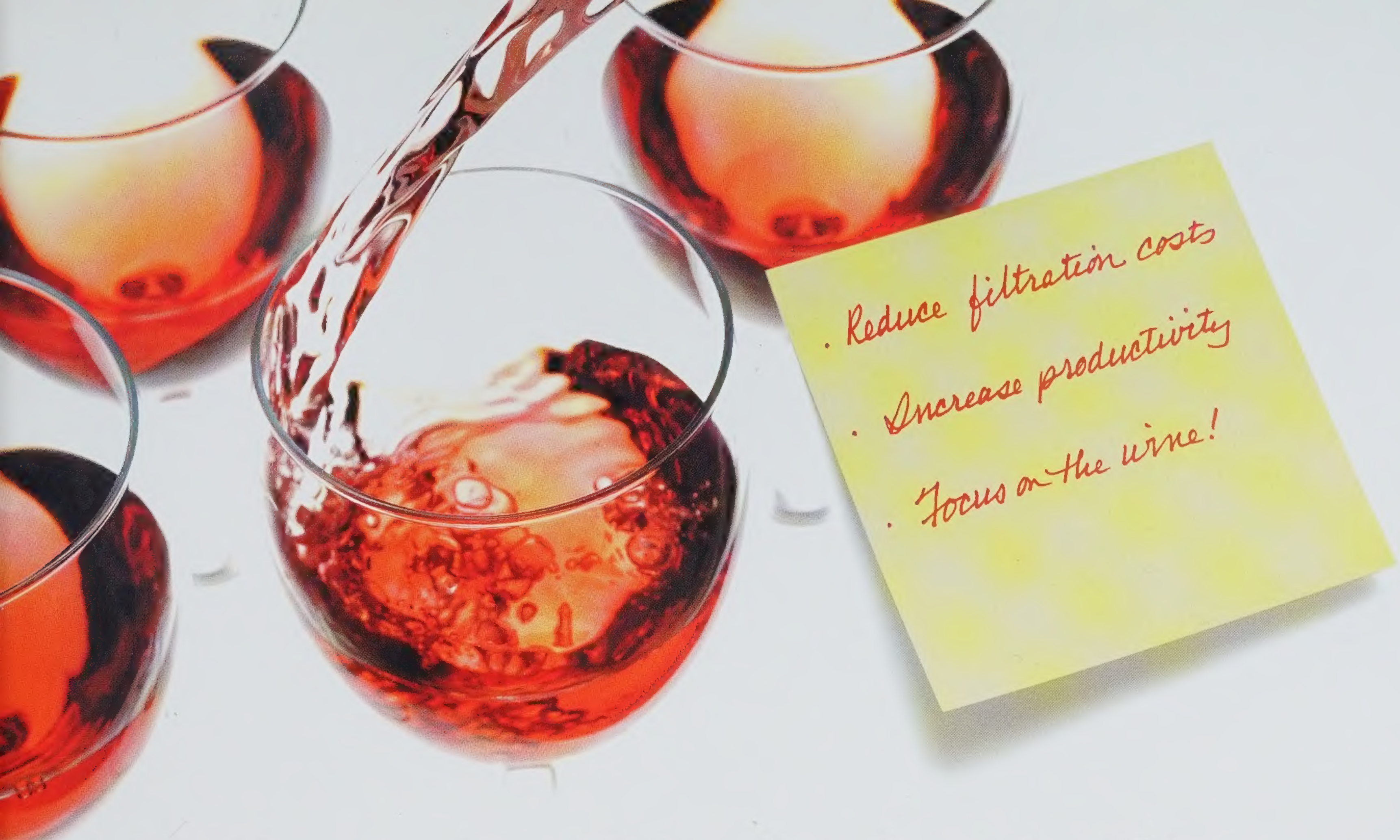
Nadalie USA	35	707-942-9301	707-942-5037	nadalie-usa.com
Napa Fermentation Supplies	30	707-255-6372	707-255-6462	wineyes@aol.com
Oak Solutions Group	25	707-259-4988	707-259-5952	pabbott@oaksolutionsgroup.com
Oenodev USA	47	707-332-1078	707-542-6364	oenodev.com
Ogletree's	67	707-963-3537	707-963-8217	speers@ogletreecorp.com
Orchard Valley Supply	54	888-755-0098	704-455-4952	info@orchardvalleysupply.com
P&L Specialties	82	888-313-7947	707-573-3140	sales@pnlspecialties.com
Pall Corporation	69	866-905-7255	516-625-3610	foodandbeverage@pall.com
Pellenc America	106	707-568-7286	707-568-7369	pellencamerica@pellencus.com
Personnel Perspective	77	707-576-7653	707-576-8190	info@personnelperspective.com
PGT/ On-Target Spray Systems	21	503-329-8120		info@ontargetspray.com
Pickering Winery Supply	80	415-474-1588	415-474-1617	pickering@sbcglobal.net
Plantra	48	800-518-6872	805-462-1378	steve@plantra.com
PRO Refrigeration	60	800-845-7781	253-735-2631	info@prorefrigeration.com
Pulsair Systems	61	800-582-7797		sales@pulsair.com
Ramondin USA	5	707-944-2277	707-257-1408	ramondinusa@ramondinusa.com
Ranch Systems	114	415-898-5900		ranchsystems.com
Randox Laboratories	56	866-472-6369	866-726-3691	randoxus@randox.com
Ray Carlson & Associates	117	707-528-7649	707-571-5541	sales@rcmaps.com
Renewable Technologies, Inc.	23	800-550-7652		renewable.com
RLS Equipment	105	800-527-0197	609-965-2509	rlsequipment.com
Roberts & Son Cooperage	31	415-457-3955	415-457-0304	staff@boswellcompany.com
St. Patrick's of Texas	36	512-989-9727	512-989-8982	stpats@bga.com
Sanitary Stainless Welding	41	559-233-7116	559-233-7172	jimm@sanitarystainless.com
Santa Rosa Stainless Steel	75	707-544-7777	707-544-6316	rod@srss.com
Saverglass	55	707-259-2930	707-259-2933	saverglass.com
Scott Laboratories	30, 49	707-765-6666	707-765-6674	info@scottlabs.com
Sierra Manufacturing	26	530-894-0202	530-894-0781	sierramfg.com
Skolnik Industries	61	773-362-1913	773-735-7257	skolnik.com
SolarCraft Services	13	415-382-7717		solarcraft.com
Sonoma County Winegrape Commission	79	707-522-5860		sonomawinegrape.org
Spec Trellising	64	800-237-4594	215-357-3122	info@spectrellising.com
SPG Solar	14	800-815-5562		spgsolar.com
Spurgeon Painting	52	707-763-7185	707-763-5659	karen@spurgeonpainting.com
StaVin, Inc.	63	415-331-7849	415-331-0516	info@stavin.com
Sunlight Electric	9	866-Get-Solar		sunlightelectric.com
Sunridge Nurseries	51	661-363-VINE	661-366-4251	sunridgenurseries.com
SureHarvest	45	831-477-7797	831-477-7790	sales@sureharvest.com
Tonnellerie Allary	68	503-307-1593	503-835-0594	tonnellerie-allary.com
Tonnellerie Bel Air	42	707-965-2119	707-965-2923	ac@arminee.com
Tonnellerie Boutes	39	510-799-1518	510-799-1557	boutesusa@sbcglobal.com
Tonnellerie Quintessence	84	707-935-3452	707-935-3422	tonnelleriequintessence.com
Tonnellerie Saury USA	66	707-944-1330	707-944-1370	info@sauryusa.com
Tonnellerie Sirugue	106	310-452-8147	310-452-7847	sirugueusa@earthlink.net
Toyota Material Handling	40	707-588-9800		tmhnc.com
T.W. Boswell	11	707-255-5900	707-255-5952	info@twboswell.com
Turrentine Brokerage	27	415-209-9463	415-209-0079	turrentinebrokerage.com
VinOak USA	2	707-746-5704	707-746-7471	vinoakusa.com
Vinotec Group	77	707-224-1813	707-224-4028	vinotecnapa@aol.com
Vintage Nurseries	59	800-499-9019	805-758-4999	vintagenurseries.com
Weedbadger	106	800-437-3392	701-778-7501	info@weedbadger.com
Westec Tank/ Belli Corp.	73	707-431-9342	707-431-8809	joe@westectank.com
Western Square Industries	109	800-367-8383	209-944-0934	westernsquare.com
The Winegrowing Consortium	85	888-897-3030		winegrowingconsortium.com
World Cooperage	124	707-255-5900	707-255-5952	info@worldcooperage.com
Yanmar	15	770-877-6224		yanmar.com



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PROFILES IN FLAVOR

BARREL PROFILE #33

TASTING NOTES

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- JUST ENOUGH REFINED TANNINS BUILD MID-PALATE WEIGHT
- CREAMY FLAVORS AND LIGHT TOASTY OAK CHARACTERS MELD NICELY
- COMPLEMENTS THE RICHNESS OF OUR ALEXANDER VALLEY FRUIT

ONDINE CHATTAN

Director of Winemaking
Geyser Peak Winery

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